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October 30, 1930

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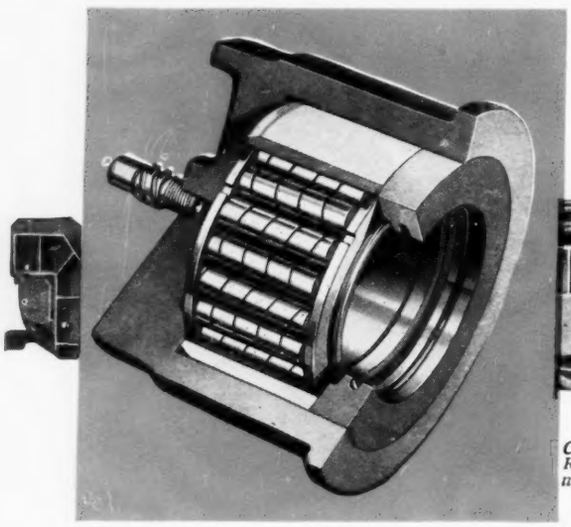

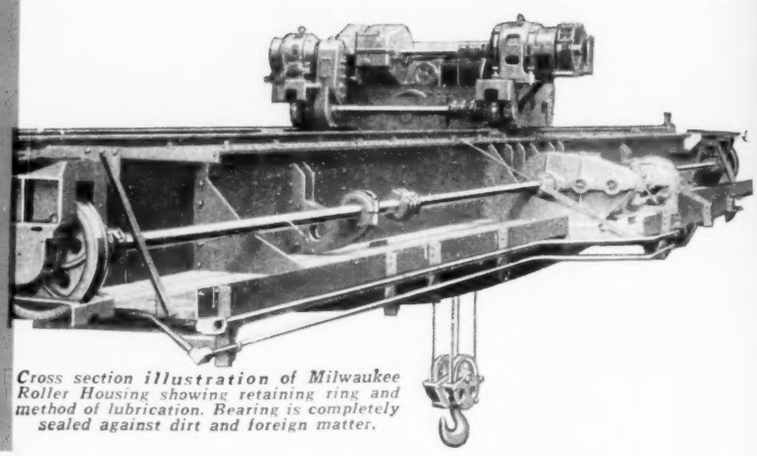

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STEEL

Published Every Thursday by

PENTON PUBLISHING CO.
PENTON BUILDING, 1213 WEST THIRD ST., CLEVELAND, O.

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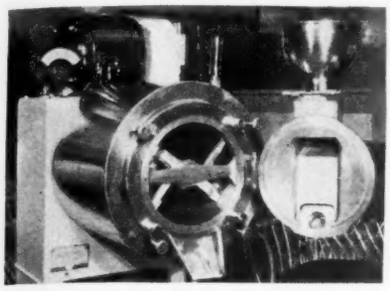

Dairy Exhibition Reveals Extensive Use of Corrosion-Resisting Steel. Page 56.

THIS WEEK:

BUSINESS meetings occupy the center of the stage in the current news. First, there is the fall session of the American Iron and Steel institute, with its discussion of business problems uppermost; then the conference of representatives of eight basic industries that was held in Chicago, at which a huge business revival was predicted. The meeting of the American Steel Founders Society of America also essentially was a business session. Distribution problems were discussed by three groups in the heavy hardware and sheet metal fields. These meetings are "covered" fully in this issue.

STEEL is published by the Penton Publishing Co., Cleveland, O. Member, Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers Association.

BRANCH OFFICES:

New York	220 Broadway
Chicago	Peoples Gas building
Pittsburgh	Oliver building
San Francisco	Alto building
Washington	National Press building
Cincinnati	Bell block
London	Caxton House, Westminster, S.W.I.
Paris	9 Rue de Londres
Berlin	Dahlmerstrasse 64 A, Lichterfeld-West

Subscription in the United States, Canada, Cuba and Mexico $6 per year; in Great Britain and European countries £2:0:0.

Entered as second class matter at Post Office at Cleveland under the Act of March 3, 1879

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Volume 87 Number 18

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

AMERICAN business is rallying its constructive forces. A year of depression has been enough; something more than hopefulness is expressed in major current events. A fighting spirit is manifesting itself; the will to action is the dominating note. Less attention is being given to reassurances and more to resolute efforts to revive trade. Within the week the problem of restoring business and relieving unemployment has been attacked on two fronts. The meeting of the American Iron and Steel institute in New York (Page 23) and the conference of eight basic industries in Chicago (Page 43) have done much to clarify the situation and to chart a course for the guidance of management. Confidence in a great revival is emphasized but, more to the point, the business world is warned against erratic competition and urged to stand fast in upholding American wage standards. Steel will lead the march to prosperity, Charles M. Schwab told the institute (Page 24) . . . while James A. Farrell declared immediate stabilization of prices is of paramount importance (Page 25). . . . And whether the clarion call for relief of unemployment will instill fear in the hearts of those employed and tend to check buying, as a first reaction, the fact remains a three-point organization—federal, state and industrial—is being perfected to provide jobs, a temporary expedient which may tide the patient nation over to a positive cure (Page 26). . . . Steel will care for its own; there will be no suffering or hardship (Page 26).

Unemployed Now Placed at 3,500,000

Unemployment is now estimated by Col. Arthur Woods, in charge of the national relief organization, as 3,500,000, a million more than indicated by the census taken April 1. In the 1921 depression bureau of labor figures indicated 3,500,000 to 5,000,000 were idle. The federal government plans no extraordinary expenditures, and a special session of congress will not be called, but there is available in federal and state road construction funds $344,000,000, and an additional $450,000,000 in bond issues will be voted on at the Nov. 4 state and municipal elections (Page 26). . . . Charles F. Abbott, executive director, American Institute of Steel Construction, tells President Hoover no unemployment exists at this time in the steel construction industry (Page 26).

Corporation Earnings Off Nearly 50 Per Cent

Too little time has elapsed to appraise the market's reaction to the optimism and demand

—International Newsreel Photo

This bridge will span the outermost entrance of Golden Gate harbor, connecting San Francisco and Marin county, California. Length from plaza to plaza will be 8943 feet, and towers will be 740 feet high. Cost, $32,815,000.

for price stabilization expressed at the institute meeting, and to President Hoover's employment campaign. For this week, at least, demand and production have continued downward (Page 69) . . . Steel corporation earnings for the third quarter are little more than half those for the same period in 1929 (Page 31) . . . Sixteen months elapsed between high and low points of daily steel ingot output in the 1921-1922 depression. Sixteen months have now passed since the peak in June, 1929. If no gain is shown for October the duration of the present decline will have exceeded that of the former period. The present period of contraction in steel and iron prices already matches it (Page 46).

Wage Cuts Affect Less Than 2 Per Cent

That the majority of manufacturing industries are keeping faith on the no-wage-reduction policy is evidenced by the fact rate cuts made this year affect less than 2 per cent of more than 3,000,000 workers, representing a cross-section of the nation's industries (Page 26). Sheet, tin plate and bar iron mill wages, based on selling prices, remain unchanged for November and December (Page 34). . . . All ten of the Fisher Body plants outside of Detroit resume on full time, with 6000 to 7000 employes, due to Chevrolet production plans; but the automobile industry as a whole is "digging in" for a hard winter, hoping for a ray of encouragement at the January shows (Page 40). . . . Ford engineering laboratories are running seven days a week, possibly on a light eight; an all-steel body for Fords is reported in the experimental stage (Page 40). . . . Distribution problems are discussed by three groups in the hardware and sheet metal fields, meeting in Atlantic City, N. J. (Page 28).

Exports Fail To Reveal "Reprisals"

An increase in steel and iron imports for September is the first gain recorded since March. Due to curtailed shipments of scrap and steel rails exports dropped 20,000 tons, though shapes, black sheets, barbed wire and skelp advanced strongly, despite the threat of reprisals for the new American tariff. Exports to date this year are 30 per cent and imports 32.4 per cent under 1929 (Page 35). . . . Statistics encourage foundries. For the first time in six months the Gray Iron institute reports an upturn in production in September, to 65.7 per cent, compared with 62.8 per cent in August (Page 37). . . . Output in malleable castings also show a slight increase for September from the low mark in the preceding month. New orders have made a slight gain (Page 37). . . . Recommendation was made at the meeting of the Steel Founders Society of America, meeting in New York, that the words "Cast Steel" be molded into all castings produced by members. Operations in this industry hover around 40 per cent (Page 27).

Magnetic "Eye" Makes for Good Shaves

Standardization of heat treatment processes in the manufacture of safety razor blades requires a uniformly high quality of steel. Human eyes, being fallible, no longer are depended upon for the steady and strict inspection of the strip of material from which the blades are made, with the perfection of an electromagnetic device for instant and positive detection of defects (Page 51). . . . Standardization on fewer types and sizes of industrial electric light reflectors also has enabled manufacturers to produce a superior article, reflecting values being held constantly to scientifically determined standards. Such steps have led to the consumption of 4000 to 5000 tons of steel annually by the companies making the reflectors (Page 60).

Dairy Industry Using More Rustless Steel

Paper may be replacing glass in the dairy industry but steel is finding a continually widening market, as evidenced at the milkmen's national exhibition in Cleveland last week. Machinery for handling the most delicate of all food products is being made of corrosion-resisting steel (Page 56). . . . Tin can and tinware output shows a 15 per cent increase to $284,288,000; the value of a single year's production of milk cans, $3,308,500 (Page 37). . . . The new chromium and chrome-nickel steels owe their hardness and resistance to corrosion to a thin, imperceptible and impervious surface film of oxide, a fact brought out in one of the papers presented at the meeting of the American Iron and Steel institute (Page 57). . . . Information regarding the use of such steels is multiplying at an amazing rate. The stock resists deformation in the hot and cold rolling of strip. Development of the backing roll mill is believed to promise a solution of this problem (Page 61).

Merger Defense Opens Fire on Eaton

Bethlehem counsel begin their counter-bombardment of the Eaton forces in the Bethlehem-Sheet & Tube merger arguments in Youngstown, O. Since Mr. Eaton admitted knowing of the Bethlehem bonuses prior to the Sheet & Tube directors' meeting March 12, but failed to disclose such knowledge, he cannot now ask for an annulment on grounds of fraudulent concealment, they contend (Page 29). . . . Pickands, Mather & Co. acquire control of Empire Steel Corp., Mansfield, O., rated as the fifth largest producer of sheet steel, under a trust agreement (Page 29).

Price Stabilization Is Urgent Need, Say Steel Leaders

WHAT assembled in New York Oct. 24 as the American Iron and Steel institute, for its thirty-eighth general meeting, was quickly transformed, as aptly put by James A. Farrell, president of the United States Steel Corp. and vice president of the institute, into the Society for the Improvement of Conditions in the Steel Industry.

In his opening address as president, Charles M. Schwab spoke on "New Horizons in Business and Industry." He decried "short-term pessimism," stressed the necessity of measuring business in terms of dollars rather than tonnage, and foresaw the forward march of the steel industry only temporarily checked by the present depression.

Following procedure that may now be regarded as custom, Mr. Farrell, speaking extemporaneously, stripped off whatever self-satisfaction in which the thousand or more at the meeting may have been basking, and in his characteristic, biting, vigorous manner proceeded to call the industry to account for its remissions, especially in the matter of price. Mr. Farrell said pithily:

"We Can Have Stability"

"The greatest thing we have done for the country was to take the position last spring that there would be no reduction in wages . . . We can have stability in the steel industry but we have got to get rid of demoralization first . . .Prices of steel are ridiculous when we consider the situation in raw material . . . Are we going to blow the froth off the situation and be fair with each other in competition? . . . We don't need a code of ethics: we need common sense . . . It is within our hands here that in sixty days we can get this business back where it belongs and get better prices, but that means a little purgatory for some people."

At the directors meeting, following the opening session, it is understood that the business situation was as thoroughly canvassed as at any time in the history of the institute. Incidentally, the four vacancies in the directorate of the institute were not filled.

The tenor of the addresses by Messrs. Schwab and Farrell at the morning session and by Myron C. Taylor, chairman of the finance committee of the Steel corporation, at the banquet, was that business was at or was passing the bottom, especially in regard to price, and that a hopeful, constructive attitude was the chief requisite now. Mr. Farrell declared emphatically that co-operate action would put the steel industry "back where it belongs and get better prices" in 60 days.

Sentiment in the informal corridor gossip, however, was less buoyant. There was a rather general feeling that the rest of 1930 may be written off as a total loss, that seasonal handicaps would operate against any stimulus that might be engendered artificially, and that in any event there could be no genuine forward movement until the automotive industry righted itself. Most discussion was to the effect that 1931 was likely to show a slightly rising curve throughout the year, the exact reverse of the mildly downward curve of 1930.

HIS PAPER BEST IN 1929

Prof. H. F. Moore, University of Illinois, awarded American Iron and Steel institute medal for 1929

Tom M. Girdler, chairman-president of the Republic Steel Corp., following Mr. Farrell at the morning session pledged the co-operation of his corporation to "the maintenance of wages, the doing away of the 7-day week and the 12-hour day, and anything along the line of the 60-day program. I think the steel industry is suffering from a state of mind. I would like to join any kind of group and start out on a 100 per cent faith in each other basis and take off our coats and tackle this job and make a little profit out of the steel industry."

At the banquet, Gen. John J. Pershing, commander of the American Expeditionary Force, and Bernard Baruch, former head of the war industries board, were silent guests. Essington Lewis, managing director of the Broken Hill Proprietary Co., Newcastle, Australia, gave the history of his company and depicted the Australian situation.

Dr. Nicholas Murray Butler, president of Columbia university, New York, delivered the address of the evening, speaking on civil, personal and economic liberty. He declared that the world cannot expect to spend four years in everything that means destruction of wealth and then return promptly to normal, progressive, satisfactory economic and industrial life. He opposed anything smacking of a dole, in ameliorating unemployment, and said reopening of the war debt situation might be helpful.

Cites Problem of Consumption

Hopes that the question of monetary standards had been settled for all the time with the defeat of the policies advocated by William Jennings Bryan have not been fulfilled, said Dr. Butler, referring to the recent depreciation in the value of silver and the consequent lowering of buying power of India and China and the disruption of their trade relations with the rest of the world.

"But the most important problem now facing the world," insisted Dr. Butler, "is that of consumption, and in the present emergency it will be no answer to offer a dole to the unemployed."

Mr. Taylor, of the Steel corporation, said the solution of the unemployment situation is not to destroy machines and close laboratories but to adjust man to machines. To be unemployed is not necessarily to be in want, he emphasized. National steel requirements are such that 50 per cent operations cannot fill them, he said, and "very soon we shall see a turn for the better."

"It is up to the steel industry to see that none of its men are forced to call upon the public in the present unemployment situation," Mr. Taylor warned.

At the banquet, attended by 1542, or somewhat under the recent average, Mr. Schwab presented to Prof. H. F. Moore, research professor of engineering materials, University of Illinois, Urbana, Ill., the American Iron and Steel institute medal for the best paper presented in 1929. Professor Moore's prize-winning paper, presented at last October's meeting, was entitled, "Fatigue of Metals."

This meeting, the 38th general, was the twentieth anniversary of the first formal dinner, Oct. 14, 1910.

Steel Industry Will Lead March to Prosperity

BY CHARLES M. SCHWAB

President, American Iron and Steel Institute

THE steel industry will lead the march to prosperity. This is a task requiring staying-power, vision and hard work. I believe we shall undertake it fearlessly and regardless of passing sentiment.

The industry today is more actively engaged than ever before in the cultivation and expansion of its markets, in the stabilization of its policies and in the improvement of its plants and organization. Moreover, it is preparing to meet a greater future demand for its products than it ever realized in the past.

We are not concerned with the cross currents of what I would call "short-term pessimism." Nor are we over-anxious about the exact date when orders will pile up on our doorsteps. Ours is a business that deals in the fundamentals of material civilization and in the essentials of human advancement.

Test of "American Prosperity"

Progress is born out of the pains of economic adjustment. The past 12 months are the first real test we have had of our new "American Prosperity," by which I mean the basic factors underlying our higher standards of living, including mass production and distribution and high wages. It is significant that there has not been uncovered in our economic foundation any basic structural failure. Because of this I believe that business revival will bring to this country a larger measure of prosperity than the American people have ever before known.

In our industry a really great development has been taking place which gives us a sane and substantial warrant for believing that researches are steadily increasing the potential demand for our products. I refer to the expansion of markets for steel, not only in accepted fields, but in new uses.

There are two factors entirely in the control of the steel industry itself which, regardless of fluctuations in general business, largely determine our success as an industry. One of these is price stability, the other is stability of production. I think we have made real progress in the increasing recognition of the importance of these two factors on the part of steel men generally. Occasionally, however, lapses occur and this seems to be an appropriate time to point out that several months ago price instability was permitted to come into our commercial structure.

Abstract of address to American Iron and Steel institute, New York, Oct. 24.

Steel Should Care for Own

We ought in our various establishments throughout the country, where our first interests lie, where we have our works and our working men, to take such measures as may be necessary to carry everybody connected with the steel industry safely through this depression. Our workmen have become just as much and more important than any other part of our industry. Let us realize that and do our best to help in every possible direction.—*Charles M. Schwab.*

More recently that situation has been largely remedied. Sharp-shooting has been limited to a few lines and the general strength in most ranges of the price structure has brought a better tone to our industry.

Business common sense demands that we keep a sane and balanced view in our selling policies. This industry has always proceeded on the basis that as methods of manufacture are improving from year to year, the public will get the benefit of economies in an orderly lowering of prices. That is an entirely different process from the destructive competition which we experienced in the earlier stages of recession. I am glad to state that the cost sheets soon won this skirmish, and undercutting was minimized.

Now Using Past Reserves

We must not forget that what we have been able to do in weathering the recent recession has been largely due to the fact that we have built up reserves from a profitable past; during which period we have been able to reach a basis of reasonable stability in every phase of our business. We stabilized costs, we stabilized employment and our manufacturing programs. If we are to maintain this stability which is after all the foundation of an advancing prosperous industry, we should not have to draw upon these reserves that we have built up through good management to such an extent as to dissipate them in unsound, unbusinesslike methods in marketing our products.

It is equally good business not to create unreasonable capacities. We shall always go forward in increasing our capacities in line with the reasonable demands of our business. But I want to sound again the warning note which I have mentioned in the past that if we plunge headlong into a program of unreasonable expansion only one thing will result, over-production.

We are today on a sane basis, and I believe we shall continue so. We have made certain accomplishments during this trying period which will find a permanent place in industrial life. I refer particularly to our dealing with that most difficult of problems — unemployment. The farsighted and sound handling of our workers' interests during these past months of trying conditions will stand out in bold relief as the major accomplishment of American management today.

Wage Slashing Avoided

It was stated six months ago at our meeting here that there would be no cut in wage rates, and that policy has been maintained. Business men generally have refused to be stampeded into following the vicious wage slashing practice of former periods of business recession. They have recognized that the retention of our wage scales would hasten return to prosperity as soon as business again begins to accelerate.

The second point of progress in this policy has been the substantial avoidance of the traditional practice of wholesale lay-offs. Industry, by and large, has retained its trained personnel, spreading out the work there is to do so that as many as possible might have some employment. Not only has this policy alleviated what otherwise might have been a bad social condition, but it has also placed our industries in the position of being ready to resume full-scale operations without the inefficiencies of training new people.

In the steel industry we have good reason to be cheerful. Ingot production for this year will be around 40,000,000 tons. That is within 5 per cent of the average production for the past ten years.

Our big job in the steel industry is to push forward, adding to our progressive policies in employment and management, an equal intelligence in marketing and the extension of the uses of steel.

The measuring stick of the future

may be in terms of dollars rather than tonnage. Alloy steels are rendering obsolete a great deal of the equipment now in existence in our industrial plants, giving promise of many markets in this direction. The rapid rise of alloy steels, the greater development of strength in relation to mass, may lead to very much lighter materials in all forms of construction. Steel may advance more rapidly than the gross tonnage may indicate, while the industry produces a lighter and more valuable steel which is of greater service to the public.

We can see right now the expansion of the uses of steel in the future. The same kind of leadership which has brought the steel industry through many a pounding battle is carrying it forward today, pushing ahead sanely and forcefully, laying the basis for a greater and more solid prosperity than we have ever before enjoyed.

Open-Hearth Meeting Will Be Held in Cleveland

The open-hearth committee of the American Institute of Mining and Metallurgical Engineers has changed the date and place of its fall meeting from the William Penn hotel, Pittsburgh, Nov. 19-20, to the Cleveland hotel, Cleveland, Nov. 20-21. During the afternoon of Nov. 21 members will visit the plant of the Corrigan, McKinney Steel Co.

Receivers Are Named

Newark, N. J.—Equity receivers for the Chrome Steel Corp., Cartaret, N. J., have been appointed by the Federal court. The receivers are Abeel Canda, Cranford, N. J., and Paul Cooksey, Rutherford, N. J.

Fair Competition Only Road to Remunerative Prices

BY JAMES A. FARRELL

Vice President, American Iron and Steel Institute

THE steel industry has been going through rather parlous times since last spring. I think the greatest thing that we have done in the industry and for the country was to take the position last spring that there would be no reduction in wages in the steel industry.

We all think and believe that wages in the steel industry are standardized. They are, to a very large extent. But I think we ought to say to our friends in the industry that this is not the time to pinch off a penny or two here and there.

We have also taken the position in the industry that we will divide the work with the men. It is often mentioned by many people who speak on various occasions that our workmen have all had high wages. I think they have had fair wages.

A man said to me the other day, "What has become of the ethics of the steel business?" I said, "The ethics are still there but most people are suffering from the hiccoughs just now. We don't need a code of ethics; we need common sense."

We can have stability in the steel industry, but we have got to get rid of demoralization first. I do not mean demoralization in business generally, so much as I mean a lack of consideration for the rights of the rank and file in the industry.

Prices of steel are ridiculous, when we consider the situation in raw material. Do you gentlemen realize that if this revolution in Brazil continues, and Brazil is a larger country than the United States when it comes to area, and if turmoil continues in India, that within four months you will be wondering where you are going to get your ferromanganese to make your steel? But we are giving away the finished product in the meantime.

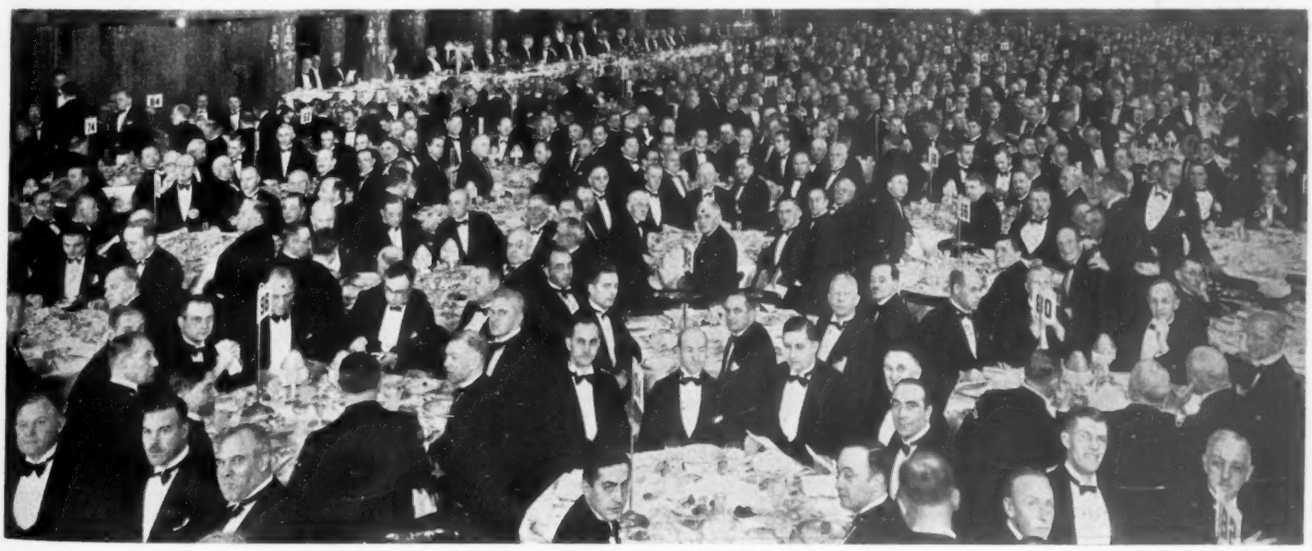
Certain situations exist that we are all cognizant of. There is no reason when bids are opened on structural steel for example and the lowest bidder is $10 or $11 lower than the next lowest bidder, that that thing should be continued on indefinitely.

You take for example large bridges, large steel bridges; they are all pretty much alike; I don't believe there is a difference of 50 cents a ton in the cost per ton of building a bridge. And yet what happens? Bids are opened and the low bidder is $8 a ton under other concerns whose costs are practically alike, and then the producer of the plain material is supposed to come to the rescue.

I have not any patience with that situation. I cannot get myself into a frame of mind that we are going to

(*Concluded on Page* 90)

Abstract of address to American Iron and Steel institute, New York, Oct. 24.



Scene at banquet of the American Iron and Steel Institute at New York on Oct. 24

Entire Nation Organizing To Find Jobs for Unemployed

WASHINGTON—Col. Arthur Woods, chairman of the President's emergency committee for employment, is moving swiftly in organizing nation-wide relief work.

He has established headquarters in the department of commerce building, has announced the appointment of Edward E. Hunt as secretary of the committee, and Edward L. Bernays, of New York, as counsel on public relations to the committee.

Croxton to Assist

He also has announced that Frederick C. Croxton, of Columbus, O., formerly special industrial assistant for Ohio, has been called to assist in the government's unemployment survey.

President Hoover has announced that there will no need for a special session of congress to deal with the unemployment situation. Col. Woods states that reports which he has at this time indicate that the worst unemployment problem is now centered in the Great Lakes states. The present figures give unemployment at about 3,500,000, compared with 2,500,000 on April 1 as tabulated by the bureau of the census. In 1921 unemployment was estimated at 3,500,000 to 5,000,000.

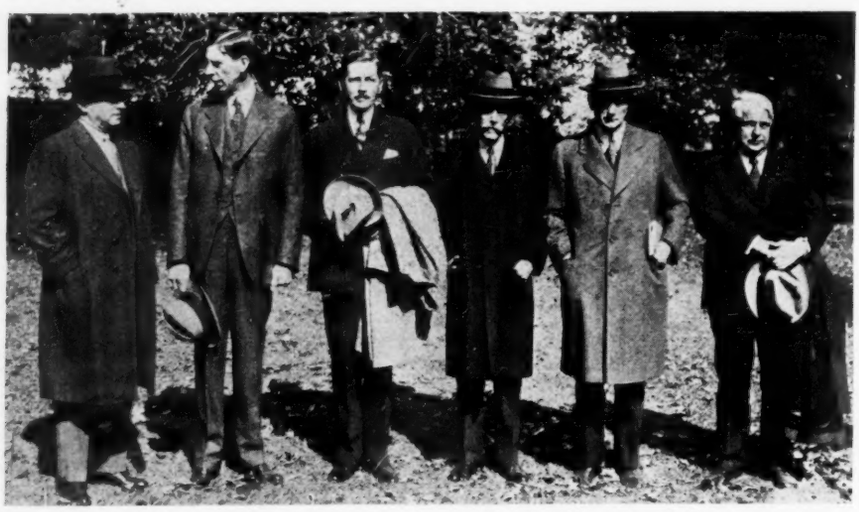
It is expected Col. Woods will appoint regional directors to co-operate with him. Every state and practically every city is doing something to find or create jobs for the unemployed, and as far as possible these efforts will be correlated.

There now is available for road construction work, he states, about $344,000,000. Also, borrowing proposals amounting to about $450,000,000 will be decided at the elections in a number of states and cities Nov. 4. Nine states have before them issues aggregating $290,000,000 and cities, counties or special districts have before them bond issues totaling $146,000,000.

"There are two directions in which more intensive organization can work," declares Col. Woods. "One is geographical, that is, through the nation, the states, municipalities and the counties. The other is by industries. I shall aim to co-operate in both ways, with the states, municipalities, and local committees on the one hand, and with the leaders of the different industries on the other."

Abbott Calls on Hoover

Charles F. Abbott, New York, executive director, American Institute of Steel Construction, called on President Hoover to tell him there is no unemployment in the steel construction industry at this time. Secretary of Commerce Lamont denies reports current in New York that he has requested railroad executives to attend a meeting here this week to accelerate car purchases.



—*International Newsreel Photo*

PRESIDENT'S UNEMPLOYMENT COMMITTEE NOW ON THE JOB

This committee will act in an advisory capacity. Left to right: Eugene Meyer, governor, Federal Reserve board; R. L. Wilbur, secretary of the interior; Patrick J. Hurley, secretary of war; Andrew Mellon, secretary of the treasury; Robert P. Lamont, secretary of commerce, and chairman of the committee; and James J. Davis, secretary of labor

Steel Should Care for Its Own, Leaders Urge

New York—Unemployment was a topic mentioned by practically every speaker before the American Iron and Steel institute meeting here Oct. 24, excepting, of course, the authors of technical papers.

Myron C. Taylor, chairman of the finance committee of the United States Steel Corp., epitomized sentiment when he declared: "It is up to the steel industry to see that none of its men are forced to call upon the public."

Charles M. Schwab, president of the institute, urged leaders of the industry to be active in relief work in the cities where their plants and interests are. James A. Farrell, vice president of the institute, referred to maintenance of wages as an important contribution by the steel industry to the employment situation.

Offers Employment Loan

A loan of $50,000 to the city of Hagerstown, Md., to expedite employment in public work has been offered by the Pangborn Corp. of that city. It is contingent upon the willingness of other interests to cooperate in a plan to raise an additional sum of $20,000. The offer was made by Thomas W. Pangborn, president of the corporation, in a letter addressed to the mayor and council.

Rail Unions Seek 6-Hour Day

Following a call of all officials of railroad unions to meet in Chicago, Nov. 12 to consider unemployment relief it was announced that a nation-wide movement will be started at that time for a six-hour day for all railroad labor in place of the present 8-hour system, with no reduction in pay. Leaders said the campaign will be waged in the same manner as the historic effort in 1916, resulting in congress passing the Adamson bill just before a threatened strike of the "Big Four" brotherhoods.

Wage Rate Cuts Affect Less Than 2 Per Cent

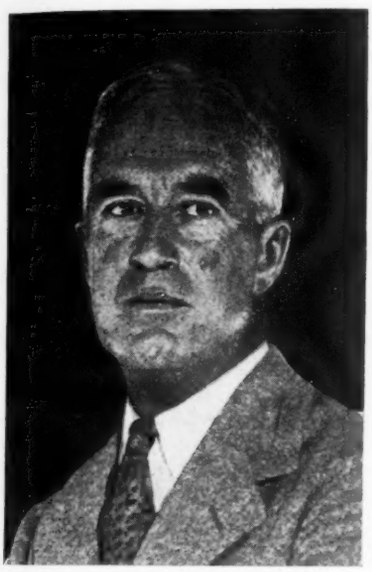
Steadiness of wage rates in leading industries is further evidenced in reports compiled by the bureau of labor statistics. The total number of persons employed in plants represented in the survey of 20 industries for the first half of 1930 was 2,378,857. Employes affected by wage re-

ductions in these plants numbered 46,744, or slightly less than 2 per cent, while those affected by rate increases numbered 36,451, or 1.5 per cent of the total.

Rate decreases were reported for only 2365 persons of 256,106 employed in foundries and plants devoted to machine shop products. Rate increases in these plants affected 663 persons. The iron and steel plants reporting gave the number of their wage earners as 263,657. Rates for 84 of these were increased, and rates for 4341 were decreased in the period from Jan. 15 to July 15.

Reopens Milwaukee Mill

Milwaukee—Inland Steel Co., Chicago, will reopen its Milwaukee sheet mill Nov. 3, giving full-time employment to about 700 men, as one means of relieving the unemployment situation. How long the mill will be operated is not stated.



International Newsreel Photo

Col. Arthur Woods

Former New York police commissioner, now in charge of President Hoover's national unemployment organization

Five-Day To Help Jobless

Lorain, O.—Employes of the National Tube Co. here who are not working on a salary basis will be placed on a five-day week basis, to provide jobs for as large a number as possible. Details of the plan have not yet been announced.

Sheet, Tin Plate and Bar Iron Mill Wages Unchanged

Wages of workers in independent sheet and tin plate mills having contracts with the Amalgamated Asso-

(*Concluded on Page* 34)

Steel Founders See Spring as Business Turning Point

WHILE the immediate outlook in the steel foundry industry is not promising, a gradual improvement is expected, according to consensus of opinion expressed at the meeting of the Steel Founders' Society of America Inc., Hotel Roosevelt, New York, Oct. 22-24. Present operations at many plants appear to be averaging little more than 40 per cent and while slight flurries may occur, little hope was held for substantial business before spring.

Major subjects discussed included new uses for cast steel, merchandising and trade customs. The first day was given over to committee meetings, while the second was devoted largely to general sessions, with a portion of the time allotted to meetings of the large and small castings divisions, respectively. A meeting of the heat-corrosion resistant alloy founders' division was held at the society's headquarters in the Graybar building on the morning of the final day.

Next Meeting Dec. 12

The next meeting of the society will be held in Chicago, Dec. 12. The first 1931 meeting, it was announced, will be held Jan. 25, further details to be divulged later. A meeting also will be held in March with special sessions devoted to sales problems. It was announced that the society's membership had increased 60 per cent over the past year.

Need for preparedness for better days to come was stressed by W. H. Worrilow, Lebanon Steel Foundry, Lebanon, Pa., vice president and chairman of the eastern division of the society, who presided at the general sessions. He urged all members to take advantage of the present in activity to install such new equipment as may be badly needed. He was in little sympathy with the "buy it now" movement, asserting that in his opinion such artificial measures seldom accomplished much good.

Discussion developed that the steel foundry industry generally is maintaining wage rates, although naturally having to reduce the number of working hours. However, some rate reductions have been initiated in the foundry industry as a whole, it was said. In some of the automotive foundries in Detroit there have been reductions of 10 to 15 per cent.

Discussing opportunities for the development of new uses for cast steel, Arthur Marks, engineer and metallurgist, Boston, asserted that by the use of proper foundry technique and proper heat treating methods cast steel could be made to serve all the requirements of cast steel and malleable and to a large extent forgings.

Cast steel, properly produced, is an ideal metal for any type of engineering construction, he declared. To obtain a lighter weight per horsepower, the tendency has been toward the use of alloys, but this use has its limitations, particularly with regard to cost, Mr. Marks pointed out.

A committee recently has been formed, with meetings to be held monthly, to discuss possibilities for the new uses of cast steel. Some now under consideration are manhole covers and frames, hydrants and architectural work, such as grills, balcony railings, fences, etc. It is pointed out that carbon steel castings have already met with unusual success where applied to architectural work.

The society recommended the practice of molding into each casting the phrase "cast steel." It was realized that many castings might be too small to permit this practice, or that it might be difficult due to certain cleaning or machining operations. However, it was believed that little difficulty would be encountered in connection with the majority of castings.

In view of the technical research work now being contemplated by the society, it was decided to defer temporarily any action in the matter of a general advertising campaign.

Massillon and Fort Pitt Bridge Shops United

Formal announcement of the acquisition of the Massillon Bridge & Structural Co., Massillon, O., by the Fort Pitt Bridge Co., Pittsburgh, has been made. The new company will be known as the Fort Pitt Bridge Works Co., with assets of $4,000,000.

Indiana Old Rates Prevail

Indianapolis—No railroad operating in Indiana having filed petition for re-hearing of the case concerning intrastate railroad freight rates, the decision of the Indiana public service commission canceling the new intrastate rates growing out of the mileage scale imposed by the interstate commerce commission in docket No. 17,000, appears to be valid. The last day for filing was Oct. 22.

Hardware Groups Seek Better Distribution Methods

DISTRIBUTION, the dominant problem of industry today, engaged the attention of hundreds of key men in the metal-working industries last week at meetings of the American Hardware Manufacturers' association, the National Hardware association, and the National Association of Sheet Metal Distributors, in Atlantic City, N. J.

Members of the National Hardware association discussed problems involved in moving goods efficiently through the channels of trade, a similar proportion of this group's program being devoted to the all-important question of distribution.

The single meeting of the National Association of Sheet Metal Distributors concerned itself almost entirely with ways and means for reducing the costs of moving merchandise. The importance of improving the distribution of sheet metal was emphasized by President F. O. Schoedinger.

F. J. McNeive, W. F. Potts Son & Co., Philadelphia, chairman of the sheet steel committee, presented the report of his committee and opened a general discussion on the problems arising in the distribution of sheet steel.

Tending to disturb the proper relations between the mills and the distributors and preventing the most economical distribution of steel sheets, Mr. McNeive pointed out, are four factors: Failure of jobbers in the same territory to co-operate with each other; failure of warehouses in some territories to adopt quantity differentials; direct shipments of small quantities of sheets on jobber accounts; and direct mill competition. The detrimental effect upon the distributors of pool or mixed cars was stressed.

By vote the members reaffirmed their stand against the shipping by mills of fewer than 25 bundles of sheets with no fewer than five bundles of a kind to any one customer. A poll among members conducted by the copper and brass committee revealed widespread dissatisfaction with existing methods for distributing these metals. Margins are inadequate, price cutting is prevalent, and direct mill competition embarrasses the distributors. Discontinuance of consigned stocks was suggested by committee members as a desirable step in stabilizing this market.

Commenting on these difficulties, Thomas D'Brophy, vice president, Revere Copper & Brass Inc., New York, said that while many jobbers have been led astray by the mirage of direct mill shipments, he feels the mills frequently have been too eager to take small orders that should fall within the sphere of the distributor.

The tin and terne plate committee recommended the adoption of quantity differentials on these materials, a survey conducted among members showing that where this pricing plan has been adopted the most popular basis is on quantities of 5 boxes, 5 to 10 boxes, 10 to 25 boxes, and 25 or more boxes. On roll tin, the suggested basis is on 1 to 10 rolls, 10 to 25 rolls, and 25 or more rolls.

Study of the most widely used coatings reveals opportunity for further simplification of terne plate. Eight-pound was the best seller reported in returned questionnaires, 20-pound was second, and 40-pound third, 75 per cent of the members reporting the demand distinctly toward heavier coatings. Convinced of the merits of tin and terne plates for roofing purposes and facing a declining demand, many distributors asked the committee to consider the advisability of undertaking a broad advertising and sales promotion campaign.

New Officers

NATIONAL HARDWARE ASSOCIATION OF THE UNITED STATES

President

G. SUMNER WILSON
Decatur & Hopkins Co., Boston

Vice presidents

BRACE HAYDEN
Dunham, Carrigan & Hayden Co., San Francisco

C. J. WHIPPLE
Hibbard, Spencer, Bartlett & Co., Chicago

Secretary

GEORGE A. FERNLEY*
505 Arch street, Philadelphia

*Re-elected.

New Officers

AMERICAN HARDWARE MANUFACTURERS ASSOCIATION

President

J. E. STONE*
Stanley Works, New Britain, Conn.

Vice presidents

A. E. ALVERSON*
Greenlee Tool Co., Rockford, Ill.

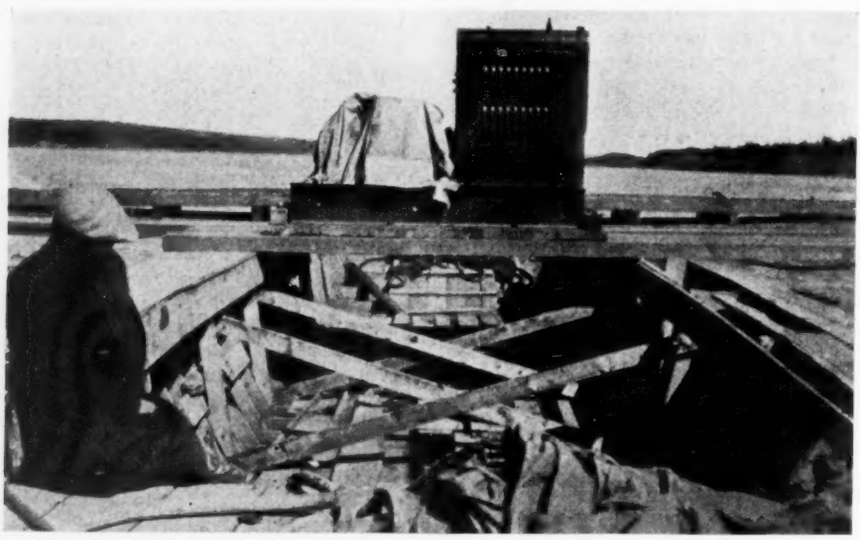
J. P. MCKINNEY JR.*
McKinney Mfg. Co., Pittsburgh

R. G. THOMPSON*
Lufkin Rule Co., Saginaw, Mich.

Secretary

C. F. ROCKWELL*
342 Madison avenue, New York

*Re-elected



AN ELECTRIC WELDNG OUTFIT IN THE FAR NORTH

The latest evidence of civilization in the far north is an electric welding outfit which recently was shipped from Edmonton, Alberta, Canada, to a point 625 miles north of that city. It was transported by scows and motor boats. At its destination it was put to work on Hudson bay steamer boilers and other ship metal work. The machine is a 200-ampere arc welding generator, made by the General Electric Co., and driven by a 4-cylinder gasoline engine. It is believed to have been the farthest north of any welding outfit on this continent

Receivers Are Appointed

Buffalo—On the application of the Aluminum Co. of America receivers

have been appointed for Premax Products Inc., Niagara Falls, N. Y., manufacturer of metal specialties, Eliot Armstrong, president of Premax, and A. V. Parker, Niagara Falls attorney, were named receivers.

Pickands, Mather Gains Large Empire Steel Block

Pickands, Mather & Co., Cleveland, has acquired the common shareholdings of the Davey group of Empire Steel Corp., Mansfield, O., whereby the large holdings of common stock of the latter will, under a trust agreement, be placed in the hands of voting trustees. It is contemplated to submit this trust arrangement to all shareholders of Empire Steel and afford them an opportunity of joining.

A meeting of directors of Empire Steel was held in Cleveland, Oct. 22, at which there was a reorganization of the board now consisting of Frank Armstrong and S. E. Bool, both of Pickands, Mather & Co.; C. F. Ackerman, president, Mansfield Savings Bank & Trust Co., Mansfield; George A. Coulton, vice-chairman of the board, Union Trust Co., Cleveland; C. D. Caldwell, president, Interlake Iron Co., Chicago; Paul Llewellyn, former president, Interstate Iron & Steel Co., Chicago; James A. Garfield, New York; W. A. and C. S. Thomas, both of Youngstown, O.; Fayette Brown, H. H. Brown Co., Cleveland; J. D. Waddell, Niles, O.; A. W. Wheatley, Lima, O.; Paul Wick, Youngstown, O.; and C. H. Henkel, Mansfield.

Paul Llewellyn was named chairman of the board in charge of management and in control of operations; C. H. Henkel continues as president; Frank Armstrong was elected vice president and J. D. Waddell continues as secretary and treasurer.

Empire Steel is rated fifth largest producer of sheet steel and was formed in 1928, a consolidation of Mansfield Sheet & Tin Plate Co., Ashtabula Sheet Steel Co., Empire Steel Co., Thomas Sheet Steel Co., and Falcon and Waddell Steel companies of Niles, O. The corporation has capacity of 400,000 tons of rolled products and 325,000 tons of ingots annually.

It will be the purpose of the new organization to further develop and promote the Empire Steel Corp. properties with a view to serving its customers to a greater extent, and further develop its special products at its plants at Mansfield, Niles, Ashtabula and Cleveland.

Name Buffalo Barge Close

Buffalo—Marine insurance underwriters have designated Nov. 20 as the last date on which iron and steel shipped by state barge canal fleets may clear from here this season.

Merger Counsel Fires Back; Impugns Eaton's Motives

COUNSEL for the defense in the suit to block the proposed Bethlehem-Sheet & Tube merger are now having their "inning" in the court of common pleas at Youngstown, O. Frederick H. Wood, Bethlehem lawyer, in his arguments this week declared the reason Cyrus S. Eaton and his associates were not permitted to have audit figures that were made for the Bethlehem corporation was because of their "unalterable opposition." He claimed they did not seek the figures to analyze them so much as to misrepresent them.

Referring to the Bethlehem executives' bonus, Mr. Wood declared that as Mr. Eaton admittedly knew of the bonus before the Sheet & Tube directors' meeting March 12 and failed to disclose such knowledge he cannot now ask a court to set aside the merger action on the ground of fraudulent concealment by directors.

Including the bonus, he said, Bethlehem's administrative and selling expense per ton over the past six years was the lowest of three of the three largest corporations embraced in the compilation of the "six-company statistics" submitted to the court. He pointed out that Bethlehem's figure in the six-year period was $2.38; Sheet & Tube $3, and United States Steel Corp. $2.95.

Attacks Financial Aspect

Confining himself mainly to general phases of the lawsuit, Luther Day, counsel for the plaintiff, declared last week that Cyrus S. Eaton, Cleveland financier, is the leader in the opposition to the merger and "neither he nor we have any apology to offer for his championing of the rights of the stockholders of Youngstown Sheet & Tube who oppose this proposed merger." He argued that the Sheet & Tube directors at their March 12 meeting which recommended the merger contract with Bethlehem to Sheet & Tube stockholders for their ratification April 8, were guilty of breach of duty toward the stockholders and hence the subsequent stockholders' meeting was null and void.

Clan Crawford, co-counsel with Mr. Day, discussed further phases of the suit, addressing himself largely to the financial matters. Analyzing the data submitted by Price, Waterhouse & Co., auditors who recommended a ratio of exchange of 1 1/5 shares of Bethlehem stock for one share of Sheet & Tube, which finally was raised to 1 1/3 shares of Bethlehem, Mr. Crawford declared the price inadequate. He contrasted the methods of accounting followed by both concerns, finally declaring Ernst & Ernst, Eaton auditors, were correct in allowing no adjustments for maintenance while its depreciation was reduced to 4 per cent, and thus $7,000,000 was deducted from Bethlehem's 1929 earnings.

He declared no auditor can accurately calculate a steelworks' depreciation, as only an appraisal by experts can do so, and concluded by arraigning the officers of Sheet & Tube for attempting to frighten the stockholders into a merger by "bugaboo stories" of highly expensive rebuilding plans compelled by new and intensive competition in sheets and pipe. His view was that Sheet & Tube was not in a bad way when it expended $22,000,000 for improvements in 1929 out of earnings, paid its regular dividends and declared a stock dividend. Against the Bethlehem expenditure of $50,000,000 for a Grey beam mill, he contrasted the $8,000,000 initial expenditure of Sheet & Tube for its sheet mills.

Continue Proxy Argument

Park Chamberlain of Chicago continued the argument for the anti-merger side, analyzing the proxies voted at the stockholders' meeting. He challenged methods by which various guardians, trustees and trust companies delegated Sheet & Tube proxy powers to others to vote favorably on the merger. Sufficient votes thus were claimed illegally given and cast to upset the April 8 ratification.

Frederick W. Wood, of New York, opened the argument for the defense last Thursday afternoon and continued through Friday. He contended that while the defense charges "constructive fraud" against Sheet & Tube directors and officers, actual fraud entailing moral delinquency has never been charged against the officials. He denied that any attempt at concealment of material facts was made.

Largely devoting his argument to question of law, Mr. Wood denied the presence of a dual or common director on the board, as was H. G. Dalton who also was a director for Bethlehem, was illegal or voided the transaction. He scouted the alleged motive of Pickands, Mather & Co. in aiding the merger as being induced by fear of losing valuable Lake Superior ore contracts with Bethlehem, claiming the Cleveland ore firm stood to lose more by this merger, if it lost anything, than by maintaining its present position of serving both companies.

Third Quarter U. S. Steel Earnings Half 1929 Rate

UNITED STATES STEEL CORP. during third quarter, ended Sept. 30, reports total earnings of $37,995,299, after federal taxes, but before depletion, depreciation, interest, etc. This compares with $47,061,304 for second quarter and $70,173,713 for third quarter of 1929.

Earnings of July and August were nearly equal, at slightly over $13,000,000 each, while September earnings fell to $11,514,933. Net profit for third quarter was $23,182,283, compared with $31,139,811 for second quarter and $53,354,320 for third quarter of 1929.

Total available for dividends for the quarter was $24,195,162, compared with $32,126,717 for second quarter and $51,575,350 for third quarter of 1929. There was carried to surplus for the quarter $2,704,950, compared with $10,840,265 in second quarter and $22,909,447 in third quarter of 1929.

The net profit for third quarter of 1930 equals $2.06 a share on 8,669,278 shares of common, against $3.02 a share on 8,560,876 shares the preceding quarter and $5.57 a share on 8,131,071 shares in third quarter of 1929. Nine months earnings on the common stock were $8.44 a share, against $15.82 a share for the first nine months of 1929.

Earnings comparisons with 1928 show a better condition. For nine months of 1928 the earnings were $140,015,493, against the 1930 total of $134,672,000. Other comparisons are shown in the accompanying tabulations, covering quarters in 1930 and 1929, with monthly totals for 1930, 1929 and 1928.

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Jones & Laughlin Steel Corp., Pittsburgh, reports third quarter net income after depletion, depreciation, taxes and interest at $1,850,837, against $3,403,687 for second quarter and $5,690,226 for third quarter of 1929. Surplus for the quarter is $102,943, against $1,528,622 a year ago. For nine months of 1930 the net income is $8,809,533, against $16,995,913 for nine months of 1929. Surplus for nine months of 1930 is $3,565,853, compared with $10,599,552 for nine months of 1929.

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Inland Steel Co., Chicago, reports for third quarter, ending Sept. 30, net profits of $778,352 after depreciation, depletion, interest and taxes, equivalent to 64 cents a share on 1,200,000 shares of common. This compares with $2,620,300, or $2.18 a share for second quarter, and $3,158,967, or $2.62 a share for third quarter, 1929. Net for nine months of 1930 was $6,119,970, or $5.09 a share on the common stock, compared with $9,293,118, or $7.74 a share for nine months of 1929. The regular $1 dividend was declared.

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Superior Steel Corp., Pittsburgh, reports net loss of $278,621, for nine months of 1930 after depreciation, interest and federal taxes. The corresponding quarter of 1929 gave net profit of $194,450, or $1.69 per share. For third quarter of 1930 the net loss was $96,262, compared with net profit of $13,073, or 11 cents a share in third quarter, 1929.

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Gulf States Steel Co., Birmingham, Ala., reports for three months ended Sept. 30 a net loss after interest, depreciation and other charges of $197,751, against net profit of $326,975, or $1.51 on common, last year. For nine months the net loss was $201,288, against net profit of $1,086,860, or $5.09 a share, last year.

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Eaton Axle & Spring Co., Cleveland, reports net profit of $10,673 for third quarter of 1930, after federal taxes. Wilcox Rich Corp. for the same period had net profits of $30,232 with class A dividend requirements of $38,826. Nine months combined earnings of the two companies after federal taxes were $1,426,536. After providing for class A dividends on Wilcox Rich stock this equals $2.19 a share on 579,677 shares to be outstanding after complete exchange of Wilcox Rich class B stock.

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Allis-Chalmers Mfg. Co., Milwaukee, reports for three months ended Sept. 30, net profit after depreciation

Steel Corporation's Quarterly Report Summarized

	Third Quarter 1930	Second Quarter 1930	Third Quarter 1929
Total earnings	$37,995,299	$47,061,304	$70,173,713
Less depreciation, depletion, etc.	14,813,016	15,921,493	16,819,393
Net income	23,182,283	31,139,811	53,354,320
Less bond interest	1,399,978	1,409,730	1,778,970
Balance	21,782,305	29,730,081	51,575,350
Add special income*	2,412,857	2,396,636	.....
Total	24,195,162	32,126,717	.....
Dividends			
Preferred	6,304,919	6,304,919	6,304,919
Common	15,185,293	14,981,533	22,360,984
Surplus	2,704,950	10,840,265	22,909,447

*Quarterly apportionment of net interest on federal tax refunds.

Monthly Earnings of United States Steel Corp.

	1930	1929	1928
January	$15,404,359	$18,759,098	$11,899,549
February	16,107,410	19,080,941	13,581,337
March	18,103,628	22,265,342	15,453,146
First quarter	49,615,397	60,105,381	40,934,032
April	16,113,583	22,361,428	13,927,481
May	16,570,790	25,604,641	16,646,845
June	14,376,931	24,029,392	16,538,660
Second quarter	47,061,304	71,995,461	46,932,986
First Half	96,676,701	132,100,842	87,867,018
July	13,479,870	24,303,058	16,133,679
August	13,000,496	24,687,088	18,597,178
September	11,514,933	21,183,566	17,417,618
Third quarter	37,995,299	70,173,713	52,148,475
Nine months	134,672,000	202,274,555	140,015,493

tion, federal taxes and other charges, $682,982, or 54 cents a share, compared with $1,200,252, or 95 cents a share, last year. For nine months net profits were $3,034,523, or $2.41 a share, compared with $3,379,340, or $2.68 a share, last year.

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Follansbee Bros. Co., Pittsburgh has reduced dividend on common stock to 25 cents a share and has declared regular quarterly $1.50 on the preferred. Three months ago a dividend of 50 cents was paid on the common and prior to that the stock was on a 75-cent basis.

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National Acme Co., Cleveland, reports net profit of $167,601 equal to 33 cents a share for nine months ended Sept. 30. Third quarter showed net loss of $102,551.

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Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., reports net income of $2,995,244 equivalent to $1.12 a share of preferred and common stock. Total for the second quarter was $3,810,744 or $1.43 a share. In third quarter of 1929 net earnings were $6,413,330 or $2.40 a share.

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Transue & Williams Steel Forging Corp., Alliance, O., reports net loss of $73,261 after all charges for third quarter. This compares with net profit of $88,325 for the third quarter of 1929. Three quarters of 1930 have shown aggregate net loss of $20,530.

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Caterpillar Tractor Co., Peoria, Ill., has declared the usual dividend of 75 cents a share with an extra of 25 cents. Net sales in the first nine months of the year were $37,319,910, compared with $38,346,300 last year.

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Perfect Circle Co., Hagerstown, Ind., reports earnings for three quarters of 1930 at $528,515 after all deductions, or $3.25 a common share. In the corresponding period of 1929, $4.68 a share was earned.

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Truscon Steel Co., Youngstown, O., reports net profit of $411,575 during third quarter, compared with second quarter net profit of $604,280 and $1,079,793 in third quarter of 1929, which was the largest in the company's history.

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Simmons Co., Kenosha, Wis., manufacturer of metal beds, reports sales of $3,114,069 in September, compared with $4,466,395 in September, 1929. Sales excluding subsidiaries amounted to $25,611,063, for the nine months, against $31,158,266 for the similar 1929 period. September sales of the subsidiary companies were $1,010,542, and for the nine months were $8,755,495.

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Link-Belt Co., Chicago, reports consolidated net profit for the nine months ended Sept. 30, at $1,802,111, equal after preferred dividends to $2.26 a share on 707,177 common shares, against $2,431,323, or $3.15 a share last year. Sales were $16,357,300, compared with $20,325,210.

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Robbins & Myers Inc., Springfield, O., for year ended Aug. 31 reports net loss of $149,654 and a $160,000 charge off covering expenses of introducing several new products and inventory write off during the year. The company's balance sheet shows current assets at 19 for 1 of current and accrued liabilities.

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Morgan Engineering Co., Alliance, O., at recent stockholders' meeting voted practically unanimously to lift the company from the direction of a creditors' committee and placing it again in the hands of the management. The company has staged a comeback from 1926, when it was placed in the committees' hands, and reports excellent prospects for 1931. Indebtedness of $959,999 of 1926 has been cut to $713,132 and bonds reduced from $1,231,000 to $876,000.

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Virginia Iron, Coal & Coke Co., Roanoke, Va., reports net loss for third quarter was $282.82, compared with net loss of $68,765.76 for second quarter and $41,453.45 for first quarter. Net loss for nine months is $110,502.03. Allowance for depreciation and depletion in the nine months was $118,418.69.

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Harbison-Walker Refractories Co., Pittsburgh, reports third quarter estimated net profits of $772,000, equivalent to 50 cents a share on common after 6 per cent dividend on the preferred. This compares with 74 cents a common share for second quarter and 96 cents for third quarter in 1929. Net for nine months of 1930 is $2.21 a share, against $2.64 a share for nine months of 1929.

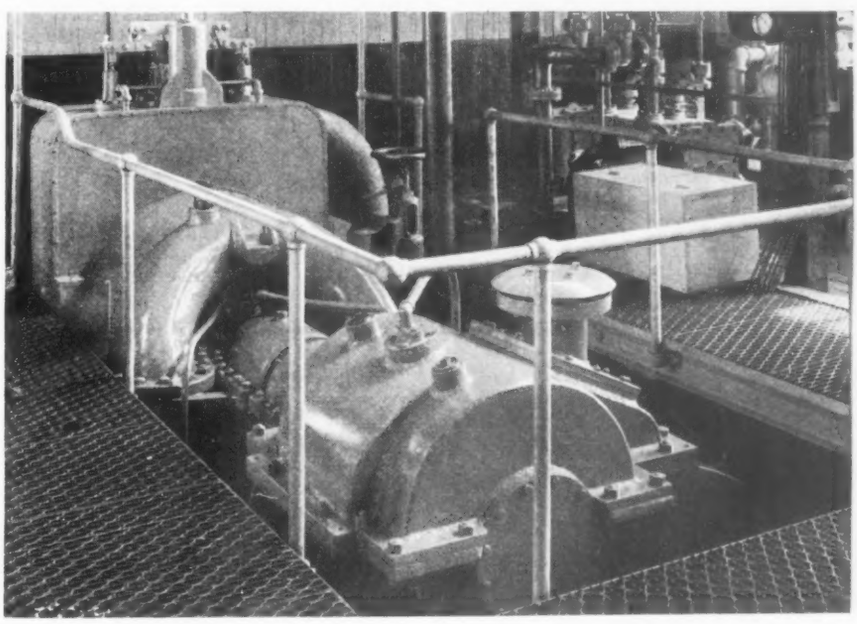
Western Railroads Ask Mileage Rate Reopening

Chicago — Western trunk line railroads filed petition Oct. 28 with the interstate commerce commission for reopening and possible rehearing of the mileage scale rate structure which became effective May 20 on iron, steel and other commodities.

Through their chief counsel, Wallace T. Hughes, general attorney for the Rock Island railroad, roads declare an actual increase in revenues resulting from the prescribed adjustment will fall far short of the amount intended by the commission and that undue preference for long haul traffic is created.

The petition says severe losses in carrier revenue from rates on iron and steel articles and disturbance in rate relationship of competing producing centers are not justified by any contention or evidence in the proceeding. It also states that prescribed rates are so low as to distort relationship around the entire southern and western border of readjusted territory.

Pettigrew Foundry Co., 145th street and Spaulding avenue, Harvey, Ill., has changed its capital stock from $125,000 to $100,000.



FIRST ALL-WELDED STEEL GEAR CASE

A 1400 brake horsepower geared turbine drive, in which the first all-welded steel gear case was used, has been installed on the American Dredging Co. dredge NEW JERSEY. *The installation was made by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.*

Industrial Men in the Day's News

Eugene C. Bauer, President, Kensington Steel Co., Chicago

—Photo by Blank & Stoller Inc.

ALTHOUGH not yet 40 years of age, he heads a company which has shown consistent growth as a manganese steel producer.

HE started in as office boy for a brake shoe and foundry company, and gradually has extended his interest in the adaptation and uses of manganese steel.

HE has worked for only five companies, American Brake Shoe & Foundry, Edgar Allan American Manganese Steel, American Manganese Steel, Inland Engineering and Kensington Steel.

IDENTIFIED with the production and marketing of manganese steel castings since pioneering days in that industry, Eugene C. Bauer has advanced through many positions from office boy of a brake shoe and foundry company to the presidency and chairmanship of a manganese steel producing company. As head of the Kensington Steel Co., Chicago, Mr. Bauer is seeking to develop further a relatively small company into a special steel casting unit of growing importance. He was elected to this office as noted in the Aug. 7 issue of STEEL.

Through special study and hard experience Mr. Bauer always has made an effort to master the complexities incident to the growth of that industry. When not yet 18 he entered the employ of the American Brake Shoe & Foundry Co., in Chicago, in 1908. Important experience was gained in the steel casting section of that company's operations. At the formation of the Edgar Allen American Manganese Steel Co., Mr. Bauer became affiliated in a sales capacity. He continued with the company after the Edgar Allen interests had withdrawn and the name style was changed to American Manganese Steel Co. With a keen interest in the adaptation and uses of manganese steel, Mr. Bauer remained in the sales department of that company until 1923, gradually extending his acquaintance among buyers and sellers of that product.

After about 13 years on the sales force Mr. Bauer left that company to become vice president in charge of sales of Kensington Steel Co., which until 1926 had been known as Inland Engineering Co. Here he became associated with the late W. S. McKee, under whom he had worked while with American Manganese Steel Co. When Mr. McKee died last May Mr. Bauer succeeded him as president and chairman of the Kensington Steel Co.

Still under 40, Mr. Bauer is one of the younger executives in the steel foundry industry. He is much interested in widening markets and the scope of consumption of manganese steel. Customers of the company include builders of excavating and crushing equipment, as well as railroad supply interests.

A. K. LEWIS, formerly works manager at Butler, Pa., for American Rolling Mill Co., Middletown, O., has returned to Middletown as assistant vice president, to succeed the late M. E. Danford, effective Nov. 1. He has been succeeded at Butler by Harry Holiday, formerly general superintendent.

Mr. Lewis became affiliated with the American Rolling Mill Co. in 1910 as draftsman. In 1923 he was made director of personnel and served in that capacity until September, 1927, when he was made works manager of the American plant at Butler.

Mr. Holiday, since graduating from Carnegie institute, has had many years experience in coke plant, blast furnace, wheel works, wheel sales and steel plant work. He was in charge of the wheel works, Columbia Steel Co., Butler when that plant was merged with the American Rolling Mill Co. in 1927.

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Charles Hart, president, Delaware River Steel Co., Chester, Pa., has resigned as president, Wrought Iron Co. of America, Lebanon, Pa., to which he was re-elected in April of this year. He will retain his place on the board of directors.

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L. D. Mercer, formerly manager, sheet division, Republic Steel Corp., Youngstown, O., and Frank L. Rownd, assistant manager, that division, have been appointed assistant managers of sales, sheet and tin plate division, with headquarters at Youngstown.

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Charles W. Pendock, president, Le Roi Co., Milwaukee, manufacturer of gasoline engines for portable air compressors, has been elected a

director, Independent Pneumatic Tool Co., Chicago. He succeeds the late William A. Libkeman. a director of the Independent company for many years.

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George Sparks, formerly manager, Truscon Steel Co., Youngstown, O.. now is general manager for Hankel-Clauss Co., Fremont, O., cutlery manufacturer.

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S. J. Woodworth has been placed in charge of the recently established office at 7338 Woodward avenue, Detroit, of American Monorail Co., Cleveland.

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K. W. Atkins, for three years general manager, southwestern territory, E. C. Atkins & Co., Indianapolis, has

A. K. Lewis

been made assistant sales director at the company's home office.

Charles S. Haggarty, manager at New Orleans for more than 20 years, been promoted to supervisor of saw mill and factory trade in New Orleans and Memphis, Tenn., territory. The Memphis office continues in charge of James W. Gladding, and the Atlanta, Ga., branch is in charge of C. J. Hendrys, supervisor of sales to the hardware and mill supply trade in the South.

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Albert Keuney, formerly of the Chicago office, Ex-Cell-O Aircraft & Tool Corp., Detroit, has been transferred to Milwaukee. H. L. Schuck has been added to the staff of the Ex-Cell-O corporation as tap expert.

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R. B. Seidel has been elected vice president and Stanley Hoot assistant treasurer, Carson, Marshall & Co. Inc., Philadelphia, exclusive agent in Philadelphia territory for Adrian Furnace Co., Punxsutawney, Pa. A. A. Alexander has become associated with the company as sales representative. Don A. Marshall is no longer with the company.

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Charles H. Hoefer has resigned as plant superintendent, Duraloy Co., New Cumberland, W. Va.

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E. D. Punthley, with headquarters at 2343 Union Trust building, Detroit, has been appointed Detroit district sales manager, Corrigan, McKinney Steel Co., Cleveland.

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Oren H. Persons, formerly assistant manager of sales at Philadelphia, American Steel & Wire Co., Chicago, has resigned to become general manager of sales, Edgcomb Steel Co., Philadelphia.

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Clinton A. Baldwin, many years associated with the Savage Arms Corp., Utica, N. Y., has been named works manager to succeed Fred T. Russell, killed in a recent automobile accident.

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Dr. D. J. McAdam Jr., of the naval engineering experiment station, Annapolis, Md., has been appointed chief of the section on metallography, bureau of standards, Washington, by George K. Burgess, director of the bureau.

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Herbert A. Carter has been appointed assistant superintendent, roll department, Lackawanna, N. Y., plant, Bethlehem Steel Co., Bethlehem, Pa. Employed at Lackawanna for the past 18 years, he now succeeds V. M. Surerus, resigned, as noted in STEEL of Oct. 16.

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A. A. Wilmot, a member of the New York sales department, Wickwire Spencer Steel Co., Buffalo, for the past five years, has been appointed assistant sales manager in charge of structural products at its Chicago office, 208 South LaSalle street, effective Nov. 1.

G. L. Crawford, a member of the Chicago structural products sales staff, Wickwire Spencer company, for the past four years, has been appointed assistant sales manager in charge of structural products at its recently-established Tulsa, Okla., office.

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E. A. Balsley has become affiliated with the Ohio Steel Foundry Co., Lima, O. He formerly was associated with the Wheeling Mold & Foundry Co., Wheeling, W. Va., as vice president in charge of operations and later was connected with the Continental Roll & Steel Foundry Co., Chicago.

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C. F. Messinger, vice president and general sales manager, Chain Belt Co., Milwaukee, has been elected general manager. H. S. Greene, formerly of the Barber-Greene Co., Aurora, Ill., succeeds him as general sales manager. Since his association with Chain Belt Co. last year, Mr. Greene has been in charge of the co-ordination of sales and distribution work.

Brinton Welser, formerly secretary, has been elected a vice president and a director. J. C. Merwin has been elected vice president. A. R. Abelt is secretary. W. H. Brandt, formerly assistant secretary, becomes assistant to the president.

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H. A. Brassert, president, H. A. Brassert & Co., Chicago, has just returned from London, England, following conferences on the reconstruction of the British iron and steel industry.

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Isaac M. Scott has retired as president of Wheeling Steel Corp., Wheeling, W. Va., the position he has occupied since 1920 when the corporation was formed to represent the merger of Wheeling Steel & Iron Co., Wheeling, Whitaker-Glessner Co., Portsmouth, O., and La Belle Iron Works, Steubenville, O. The resignation is effective immediately, since Mr. Scott wishes to take a rest and to travel after his nearly half a century in iron and steel.

—Photo by Blank & Stoller Inc.

Isaac M. Scott

As a boy he became identified with the shipping department of Aetna Iron & Nail Co., Bridgeport, O., and continued with it and its successor, Aetna-Standard Iron & Steel Co. until 1893, rising to assistant secretary. In 1893 he was elected secretary-treasurer, Beaver Tin Plate Co., Lisbon, O., and in 1898 he returned to Aetna-Standard as secretary, where he remained until 1899 when it was acquired by American Sheet Steel Co.

From 1899 to 1903 he was auditor of the latter company, which later merged with others to form American Sheet & Tin Plate Co. In 1903 Mr. Scott was elected treasurer of La Belle Iron Works, and one year later

became president. He left in 1913 to organize Wheeling Sheet & Tin Plate Co., which built the Yorkville, O., tin plate plant. This company later became Wheeling Steel & Iron Co., of which Mr. Scott was president at the time of the merger in 1920.

Mill Wages Unchanged

(*Concluded from Page 27*)

ciation of Iron, Steel and Tin Workers will be unchanged for November and December, according to the determination by the mill and amalgamated representatives in Youngstown, Oct. 27. Average sales price of Nos. 26, 27 and 28 gage black sheets in September and October was 2.75c per pound. Two months ago wages were reduced 4½ per cent, down to 18 per cent above base, and they will continue at that level. Following is a comparison of price averages:

Sept.-Oct.	2.75c	unchanged
July-Aug.	2.75c	—4.5 per cent
May-June	2.90c	unchanged
March-April	2.90c	—4.5 per cent
Jan.-Feb., 1930	3.05c	unchanged
Nov.-Dec.	3.05c	unchanged
Sept.-Oct.	3.05c	unchanged
July-Aug.	3.05c	unchanged
March-April	3.00c	unchanged
May-June	3.65c	+1.5 per cent
Jan.-Feb., 1929	3.00c	unchanged
Nov.-Dec.	3.00c	unchanged
Sept.-Oct.	3.00c	unchanged
July-Aug.	3.00c	unchanged
May-June	3.00c	unchanged
March-April	3.00c	unchanged
Jan.-Feb., 1928	3.00c	unchanged

The average sales price of bar iron in September and October was 1.80c per pound, and therefore wage rates in bar iron mills having contracts with the Amalgamated association will not be changed for November and December. Following are price averages:

	1930	1929	1928
Jan. Feb.	1.95c	2.00c	1.85c
March-April	1.90c	2.00c	1.90c
May-June	1.90c	2.00c	1.90c
July-Aug.	1.80c	2.00c	1.95c
Sept.-Oct.	1.80c	2.00c	2.00c
Nov.-Dec.		2.00c	2.00c
Yearly average		2.00c	1.933c

Prof. Moore Will Broadcast Over National Network

H. F. Moore, professor of engineering materials, University of Illinois, Urbana, Ill., will speak on the "Romance of Engineering Materials," Saturday, Nov. 1, 7:15 to 7:30 p. m., eastern standard time, over the facilities of the Columbia Broadcasting system.

This address, one of a series dealing with romance of American industry arranged by the broadcasting company, is sponsored by the American Society for Testing Materials, Prof. Moore being a past president of the society. A coast-to-coast network of 32 stations be used.

Obituaries

PEIRCE D. SCHENCK, 52, president, Duriron Co. Inc., Dayton, O., died Oct. 15, following an illness of pneumonia. He received his education at Phillips-Andover academy and at Sheffield Scientific school, Yale university. He became identified with Dayton, O., street railways following college, but after about two years became affiliated with Dayton Malleable Iron Co., first as vice president and later as president. In 1915 he aided in organizing the Duriron Co., being made president.

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Charles J. Goehringer, 55, president, Goehringer Metal Supply Co., Cincinnati, died Oct. 26.

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W. G. Wallace, chief inspector since 1912, American Steel Foundries, Chicago, died there recently.

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Thomas E. Pennock, 44, president and general manager, Standard Automatic Machine Co., Rochester, N. Y., died there Oct. 20.

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Thomas H. McKinney, 68, president and part owner of the McKinnel Steel & Sales Co., North Chicago, Ill., died Oct. 23.

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Frederick Charles Thomson, manager and treasurer, Michigan Sprocket Chain Co., Detroit, died Sept. 29. At one time he was with Michigan Malleable Iron Co., Detroit.

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Sherman Leland Whipple, 69, one of the receivers of E. Arthur Tutein Inc., Boston, and leading trial lawyer of that city, died of heart disease Oct. 20.

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Albert H. Dickey, 69, founder and retired president, Dickey-Grabler Co., Cleveland, stamp and die manufacturer, died Oct. 22 at his home in that city. He located in Cleveland 42 years ago, where he organized the Dickey-Grabler Co. on a partnership basis, becoming president when it was incorporated several years later.

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Arthur C. Woods, who with R. N. Woods and Lotta Woods incorporated A. C. Woods & Co., Rockford, Ill., structural steel fabricators, died in that city Oct. 11.

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Joseph A. Boyer, 82, chairman, Burroughs Adding Machine Co., Detroit, died of pneumonia Oct. 24. He followed the machinists' trade in St. Louis for 31 years, inventing the first successful pneumatic hammer. He became affiliated with William S. Burroughs, inventor of the adding machine, in St. Louis 54 years ago, and removed to Detroit in 1904, later becoming president and then chairman.

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Edward P. Roberts, 73, member of the engineering firm of Roberts & Abbott, Cleveland, died recently in that city. He served as president of Cleveland Engineering society, 1911 to 1913.

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E. A. W. Jefferies, 68, head of the gas engineering department, Morgan Construction Co., Worcester, Mass., died Oct. 20. In February, 1921 he was elected a director of Hobbs Mfg. Co., Worcester.

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George W. Caldwell, 70, head of Caldwell & Drake Iron Works, Caldwell & Drake, builders, Caldwell Mfg. Co., and National Machine Co., all of Columbus, Ind., died recently at Indianapolis, where he had been located for the past 11 years.

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James A. Whitcomb, 51, president and manager, Whitcomb Wheel Co., Kenosha, Wis., died recently at Beatrice, Nebr. He was superintendent of machine shop, American Brass Co., Kenosha, for many years, later establishing Kenosha Wheel & Axle Co. and Whitcomb Wheel Co.

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Merrill Hibbard, 54, president, Middle States Construction Co., Columbus, O., died Oct. 16 of nephritis. Born in Cincinnati, he had resided in Columbus since 1904, having lived previously in Pittsburgh. He was chief engineer, Jeffrey Mfg. Co., for 21 years and had been with Middle States Construction Co. for the past five years, serving two years as president. He was graduated from University of Cincinnati in 1898. Mr. Hibbard was a member of the American Society of Mechanical Engineers and American Society of Civil Engineers.

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Albert Graham, 82, oldest bolt and nut manufacturer in the United States, died at Pittsburgh, Oct. 28. He first became connected with the bolt and nut industry in 1881 with William Charles & Co., Pittsburgh, securing controlling interest in 1896. In 1902 the name style was changed to Graham Nut Co. Mr. Graham retired from active business in 1922 when the Jones & Laughlin Steel Co. acquired an interest and the firm name was changed to Graham Bolt & Nut Co.

September Imports Gain, Exports Losing Ground

SEPTEMBER export trade of the United States in iron and steel products totaled only 131,211 gross tons, 20,024 tons less than in August, according to figures compiled by the iron and steel division, department of commerce. While there were many instances of reduced shipments, the ratio of losses to gains being about as 3 is to 2, most of them were small and the 20,000-ton drop noted above can be laid almost entirely to the curtailed shipments of scrap and steel rails. Strong gains in exports of skelp, black steel sheets, structural shapes and barbed wire did much to offset the effect of the more numerous losses.

The import trade, at 40,285 tons, for the first time since March of this year showed a gain over the trade of the preceding month. This increase, a matter of 4898 tons, resulted from gains in importations of pig iron, steel ingots, concrete reinforcement bars, structural shapes, and hoops and bands, in all of which, with the exception of the first named, Belgium played a leading role.

September exports averaged 4340 tons daily against 4879 in August and 4251 tons in July, while imports averaged 1343 tons daily.

Foreign trade in iron and steel over the first nine months of 1930 is well under that of the same period of 1929. The 1930 export trade

IMPORTS AND EXPORTS

Gross Tons

	—1930—		—1929—	
	Imports	Exports	Imports	Exports
Jan.	42,314	225,090	54,793	274,296
Feb.	43,351	197,426	58,146	259,711
Mar.	55,604	238,333	52,747	270,925
April	52,650	208,640	54,337	277,580
May	52,814	196,120	74,272	261,516
June	48,955	159,392	63,635	247,811
July	39,700	131,772	71,378	270,532
Aug.	35,387	151,235	83,969	242,856
Sept.	40,285	131,211	60,974	222,408
Total (9 mos.)	411,060	1,639,219	574,251	2,327,635
Oct.	.....	.....	63,226	247,646
Nov.	.....	.....	54,041	241,829
Dec.	.....	.....	47,486	215,242
Total	.....	.....	739,004	3,032,352

ORIGIN OF SEPTEMBER IMPORTS

Gross Tons

	Steel Ingots, Blooms	Steel Scrap	Cast Iron Pipe	Steel Bars
Austria	8	.....	.....	10
Belgium	2,779	.....	.....	4,478
Canada	3	1,383	.....	2
Cuba	.....	817	.....	.....
France	321	.....	351	128
Germany	76	.....	22	731
Norway	.....	.....	.....	8
Sweden	29	33	.....	531
United Kingdom	4	.....	.....	22
Total	3,218	2,233	373	5,910

IMPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Item	Sept., 1930	Aug., 1930	Sept., 1929
Pig iron	10,330	8,747	
Sponge iron	1	.....	11,013
Ferromang. and spiegel*	2,265	2,236	2,795
Ferrochrome†	.....	.....	48
Ferrosilicon**	4	84	966
Scrap	2,233	1,511	6,399
Steel ingots, blooms, billets	3,218	1,295	2,360
Concrete bars	3,666	1,747	
Hollow bar, drill steel	189	126	3,694
bars	2,440	2,704	
Iron slabs	.....	2	
Iron bars	65	49	161
Wire rods	400	317	1,401
Boiler, other plate	.....	5	215
Sheets, skelp, saw plate	788	2,927	2,771
Tin plate	48	24	29
Structural shapes	6,537	5,297	
Sheet piling	.....	.....	15,525
Rails, fastenings, fittings	2,223	2,139	258
	373	28	3,478
Welded pipe	654	1,145	
Other pipe	640	1,489	2,470
Barbed wire	263	461	217
Round iron, steel wire	225	297	551
Flat wire and strip steel	100	60	199
Wire rope and strand	122	145	93
Other wire	51	34	17
Hoops and bands	2,916	1,734	5,580
Nails, tacks, staples	418	636	857
rivets	33	12	47
shoes	.....	2	.....
Castings, forgings	77	70	90
Total	40,285	35,387	61,245

*Manganese content.
†Chromium content.
**Silicon content.

DESTINATION OF SEPTEMBER IRON AND STEEL EXPORTS

Gross Tons

	Galv. steel sheets	Tin terne plate	Black sheets	Steel bars
Argentine	89	1,627	593	13
Brazil	512	306	26	66
Canada	889	11,981	8,857	1,736
Cent'l Amer.	167	.....	4	110
Chile	1	784	28	235
China	76	972	43	33
Columbia	148	26	10	34
Cuba	248	587	74	156
Dutch East Indies	396	.....	.....	.....
Finland	13	.....	.....	.....
France	10	.....	155	.....
Greece	.....	210	.....	.....
Japan	1	3,075	320	4
Java	124	.....	.....	.....
Mexico	359	836	58	87
Norway	54	.....	.....	.....
Panama	258	.....	.....	41
Philippines	783	546	54	189
Peru	32	4	5	147
Soviet Russia	.....	.....	.....	109
United Kind.	19	21	38	.....
Uruguay	.....	97	11	.....
Venezuela	79	1	9	2
Total	5,509	22,135	10,339	3,739

EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Item	Sept., 1930	Aug., 1930	Sept., 1929
Pig iron, not including ferro-alloys	833	765	1,806
Ferromang. and spiegeleisen	234	1,077	98
Scrap	7,663	18,607	32,803
Ingots, blooms, etc.	256	165	2,450
Iron bars	171	338	192
Steel bars	3,739	4,840	16,999
Alloy steel bars	487	291	395
Wire rods	1,288	3,179	2,247
Plates	5,938	6,799	12,868
Skelp	12,959	7,925	12,136
Iron sheets, galvanized*	428	566	
Steel sheets, galvanized*	5,059	5,219	13,218
Steel sheets, black	10,339	6,537	11,822
Iron sheets, black	998	909	1,313
Hoops, bands and strip steel	2,609	2,196	4,509
Tin plate, terne plate, etc.	22,135	21,950	19,910
Structural shapes, not fabricated	12,128	10,294	21,187
Structural shapes, fabricated	10,214	8,553	10,170
Tanks, complete and knocked down†	1,095	3,097	334
Metal lath	1,224	325	
Steel rails	6,526	18,298	10,070
Rail fastenings, switches, frogs, etc.	1,236	2,409	1,704
Boiler tubes	1,150	929	1,761
Casing and oil line pipe	2,952	4,157	6,540
Malleable iron screwed pipe fittings	720	715	784
Cast iron screwed pipe fittings	463	549	1,893
Cast iron pressure pipe and fittings	592	646	1,971
Cast iron soil pipe and fittings	1,099	659	3,170
Black and galvanized welded wrought pipe*	714	1,258	12,684
Black and galvanized welded steel pipe	5,368	7,985	.....
Plain wire	1,473	1,708	3,344
Barbed wire and woven wire fencing	3,566	2,127	5,548
Woven wire screen cloth	122	214	156
Wire rope	453	306	437
Insulated wire and cable, iron and steel	28	21	113
Other wire and manufactures	445	511	628
Wire nails	870	816	813
Nails, other than wire	377	429	778
Tacks	27	30	60
Bolts, nuts, rivets, etc., except railway	659	758	1,483
Iron castings	339	417	582
Steel castings	558	845	671
Car wheels and axles	1,373	1,047	1,250
Horseshoes	2	57	35
Forgings	294	712	483
Total	131,211	151,235	221,415

*Combined prior to 1930.
†Inluded in a miscellaneous classification prior to 1930.

ORIGIN OF SEPTEMBER IRON AND STEEL IMPORTS

Gross Tons

	Iron ore	Pig Iron	Manganese	Ferro-mang.
Algeria and Tunis	13,400	.....	.....	.....
Australia	12,035	.....	.....	.....
Belgium	.....	515	.....	.....
Brazil	.....	.....	6,192	.....
Brit. India	.....	7,848	1,804	.....
Brit. W. Africa	.....	.....	2,747	.....
Canada	.....	96	802	836
Chile	147,845	.....	.....	.....
Germany	.....	.....	17	.....
Netherlands	.....	229	.....	.....
Norway	.....	53	.....	122
Soviet Russia in Europe	7,159	.....	10,009	.....
Spain	14,315	.....	.....	.....
Sweden	20,739	.....	.....	.....
United Kingdom	.....	1,589	.....	1,307
Total	215,493	10,330	21,571	2,265

DESTINATION OF IRON AND STEEL EXPORTS

Gross Tons

Country	Sept., 1930	Aug., 1930	Sept., 1929
North & Central America & West Indies	81,549	74,118	111,198
Canada and Newfoundland	67,426	59,882	88,107
Cuba	3,559	4,545	5,704
Guatemala	248	301	481
Honduras	394	377	364
Mexico	5,259	4,464	8,922
Panama	998	2,088	2,864
Salvador	101	131	127
British West Indies	798	1,102	1,288
Other West Indies	1,919	842	2,703
Other Central America	847	386	638
South America	16,541	30,654	27,446
Argentina	4,990	2,069	6,145
Brazil	2,950	1,775	6,240
Chile	2,775	16,910	2,898
Colombia	1,095	1,660	2,424
Peru	1,423	1,990	6,949
Uruguay	1,251	1,889	372
Venezuela	1,652	3,016	2,042
Other South America	405	1,345	376
Europe	5,969	9,263	25,332
France	281	82	1,054
Germany	189	105	246
Italy	543	415	7,888
Poland and Danzig	.....	1	3,002
Soviet Russia in Europe	264	387	2,249
Spain	33	124	71
Sweden	95	388	140
United Kingdom	3,083	4,370	7,825
Other Europe	1,481	3,391	2,857
Far East	25,570	34,820	55,256
British Malaya	293	534	490
China	1,927	1,883	6,356
Netherlands East Indies	2,804	3,728	3,544
India and Ceylon	1,211	4,420	1,004
Hong Kong	381	124	631
Japan	11,127	14,920	28,319
Kwantung	2,573	165	566
Philippine Islands	4,333	7,562	11,622
Australia	514	737	1,348
New Zealand	115	187	735
Other Asia and Far East Markets	292	560	641
Africa	1,582	2,380	2,183
Union of South Africa	795	589	813
Egypt	180	32	444
Mozambique	406	1,432	892
Other Africa	201	327	34

over this period has totaled 1,639,219 tons, 703,142 tons or 30 per cent less than in 1929. The reduction was reflected by practically all classes of materials. None of the gains recorded was large, while losses in plain structural shapes, steel bars, scrap and steel plates were each in excess of 50,000 tons.

Imports displayed a similar trend and the decline was 190,388 tons or 32.4 per cent below the same period of 1929. Reduced imports of scrap, cast iron pipe, ferromanganese and structural materials account for much of this reduction.

Structural Orders Slump; Castings Gain in September

FABRICATED structural steel orders in September, as reported to the department of commerce, were 42 per cent of capacity, compared with 66 per cent in August and 77 per cent in September, 1929. Shipments in September were 65 per cent of capacity, compared with 70 per cent in August and 76 per cent in September, 1929. Comparative figures are as follows:

1929	New orders (tons)	Computed tonnage	Shipments computed tonnage
Sept.	264,056	315,700	315,700
(9 mos.)	2,455,522	2,987,600	2,675,750
Oct.	282,973	338,800	350,350
Nov.	187,760	227,150	284,900
Dec.	263,498	315,700	265,650
(Year)	3,189,753	3,823,050	3,553,550
1930			
Jan.	*212,107	248,000	240,000
Feb.	*236,166	280,000	296,000
March	208,951	248,000	280,000
April	196,409	232,000	300,000
May	*245,767	292,000	280,000
June	*220,822	*264,000	296,000
July	*236,736	*284,000	*292,000
Aug.	*220,587	264,000	280,000
Sept.	**136,558	168,000	260,000
(9 mos.)	1,914,103	2,272,000	2,524,000

*Revised.
**Preliminary.

Gray Iron Output Makes First Gain in Six Months

For the first time in six months the Gray Iron institute, Cleveland, finds from reports of members that production in September showed an upturn. Reports from 169 foundries gave a production percentage of 65.7, compared with 62.8 per cent in August. September, 1929, showed production at 140.1. New business and unfilled orders declined from August. The former dropped from 56.3 in August to 49 per cent in September, while unfilled orders dropped from 48.4 per cent in August to 37.3 in September.

Greatest activity was met in the area including Wisconsin, Illinois and the area west of the Mississippi. The Chicago district increased its production from 61.1 to 68.2 per cent. Foundries making 1 to 100 tons per month had the largest per cent of increase.

Malleable Castings Make Gain in Production

Malleable castings output in September was up slightly from the low mark set in August. Shipments were down, however, from August and new orders made a small gain, according to aggregate of 117 reports to the department of commerce from firms operating 131 plants, as follows:

	Production, tons	Shipments, tons	Orders booked tons	Per cent cap. operated
1929				
Sept.	59,087	62,571	52,647	61.2
(9 mos.)	666,842	665,241	641,094	77.2
Oct.	65,526	58,733	61,164	66.7
Nov.	46,459	46,487	40,145	47.7
Dec.	46,029	47,689	43,475	47.3
(Year)	824,856	818,150	785,878	71.3
1930				
Jan.	61,381	57,820	58,009	61.6
Feb.	65,942	59,971	61,606	67.4
March	63,464	65,164	60,915	64.6
April*	61,984	60,875	54,625	63.1
May*	53,502	55,656	47,022	53.8
June*	39,347	43,937	33,865	40.3
July*	30,911	32,656	30,068	30.9
Aug.*	25,614	31,845	25,409	26.2
Sept.**	26,510	28,874	25,753	26.2
(9 mos.)	428,655	436,798	397,272	48.2

*Revised. **Preliminary.

Boiler Orders Are Less

Orders for new boilers placed with 81 manufacturers in September, were less than August, according to figures reported to the department of commerce. The total number was 1254, compared with 1371 in August. September orders gave a total of 1,282,388 square feet, compared with 1,356,751 square feet in the August orders. For nine months of 1930 the square footage has been 11,321,993, compared with 15,557,547 in the same period of 1929.

Fabricated Plates Lower

Orders for fabricated steel plate in September as reported to the department of commerce showed a slight

gain, principally due to increased activity of oil producers. The total of 33,602 tons is the largest since June and exceeds that of May. Comparative figures are as follows:

	Total	Oil storage tanks	Blast furnaces	Stacks & miscellaneous
1929				
Sept.	41,653	15,189	200	16,123
(9 mos.)	415,136	117,362	8,726	177,248
Oct.	32,099	8,786	853	15,766
Nov.	42,295	9,033	1,019	14,601
Dec.	23,535	3,669	1,529	13,166
Total (year)	513,065	138,850	12,127	220,781
1930				
Jan.	50,076	7,432	1,042	15,168
Feb.	28,332	7,865	279	11,656
March	38,051	6,593	2,749	17,675
April	39,437	8,460	273	17,698
May	30,306	9,222	426	13,228
June*	35,367	8,841	511	16,944
July*	31,440	10,850	102	13,165
Aug.*	29,235	9,388	750	15,695
Sept.*	33,602	14,106	514	13,084
(9 mos.)	315,846	82,759	6,646	134,313

*Revised.

Babbitt Changes Little

Production and consumption of babbitt metal in September showed little change from the rate of August, according to the department of commerce. While consumption by producers was slightly larger and sales were a trifle lower the total apparent consumption was only 28,032 tons larger than in August. Comparative figures are as follows:

	Total apparent consumption	Sold by manufacturers	Consumption by producers
	(Figures given in pounds)		
1929			
Sept...	5,225,004	3,887,599	1,337,405
(9 mos.)	51,750,484	40,551,652	11,198,832
Oct...	5,518,851	4,007,260	1,511,591
Nov...	4,522,034	3,205,689	1,316,345
Dec...	3,343,492	2,394,159	949,333
Total (year)	65,134,861	50,158,760	14,976,101
1930			
Jan...	4,408,455	3,405,041	1,003,414
Feb...	3,426,576	2,525,771	900,805
March	5,051,575	4,039,395	1,012,180
April	3,868,408	2,838,877	1,029,531
May	3,932,501	3,003,298	929,203
June	3,702,989	2,546,606	1,146,383
July	2,907,977	2,022,058	885,919
Aug.	2,737,121	1,783,331	953,790
Sept.	2,765,153	1,730,269	1,034,884
(9 mos.)	32,800,755	23,894,646	8,906,109

Pittsburgh River Traffic in September Upswing

River traffic in iron and steel traffic in the Pittsburgh district increased during September compared with August, but was lighter than during the corresponding month of last year. Allegheny river shipments of 5100 tons were the largest of the year and reflect the movement of pig iron from West Virginia to Brackenridge, Pa. River shipments for the first nine months of this year are practically the same as during the corresponding period of 1929. Comparative monthly figures follow:

	Allegheny	Monongahela	Ohio
1929			
Sept.	.....	135,773	150,163
(9 mos.)	1,607	940,201	927,887
Oct.	.....	119,380	119,129
Nov.	500	83,189	88,011
Dec.	400	60,957	77,885
Total	2,507	1,203,827	1,212,912
1930			
Jan.	100	58,784	64,736
Feb.	210	80,327	74,385
March ..	100	111,702	109,911
April	1,000	70,229	66,482
May	.....	117,942	128,502
June	700	137,603	144,099
July	1,125	132,161	147,558
August ..	2,600	96,498	107,948
Sept.	5,100	106,079	109,129
(9 mos.)	10,935	911,325	952,750

Tinware Output Increases

Total value of tin cans and other tinware shipped or delivered in 1929 by manufacturers engaged primarily in the production of such commodities amounted to $284,288,513, according to data collected in the census of manufactures taken in 1930. This represents an increase of 15 per cent compared with $247,132,963 for 1927, the preceding census year. The 1929 total is made up as follows: Hole-top cans, including cans for condensed and evaporated milk, $25,855,002; sanitary cans, $125,983,625; general line cans and packages, $118,469,914; ice cream cans, $1,188,818; milk cans, $3,308,578; stamped tinware, $4,229,157; other tinware, $5,253,419.

Steel Furniture Off

Shipments of metal furniture in September, as reported to department of commerce, were slightly below August while new orders showed a slight gain, in the business group. In the shelving group both new orders and shipments were distinctly below August totals, as shown in the following:

	Business Group		Shelving	
	New orders	Shipments	New orders	Shipments
	(In Dollars, 000 omitted)			
1929				
Sept.	2,294	2,313	879	842
(9 mos.)	25,710	25,702	9,090	8,627
Oct.	2,842	2,983	927	979
Nov.	2,900	2,631	801	859
Dec.	2,583	2,781	735	856
(year)	34,036	34,038	11,554	11,322
1930				
Jan.	2,886	2,890	724	674
Feb.	2,370	2,549	758	682
March	2,627	2,726	839	812
April	2,523	2,427	796	814
May	2,310	2,342	725	751
June	2,006	2,168	699	705
July	1,840	1,811	596	604
Aug.	1,787	1,985	524	554
Sept.*	1,794	1,879	508	496
(9 mos.)	20,148	20,780	6,172	6,095

*Revised.

John Fritz Medal Goes to Naval Engineer

David Watson Taylor
Rear Admiral, United States Navy, Retired

THE John Fritz gold medal, highest honor of the American engineering profession, has been awarded for 1931 to Rear Admiral David Watson Taylor, retired, it is announced. The award was for "outstanding achievement in marine architecture, for revolutionary results of persistent research in hull design, for improvement in many types of warships, and for distinguished service as chief constructor of the United States navy during the World war."

The award was made unanimously by the John Fritz Medal Board of Award, comprising four representatives each of the four American societies of mechanical, electrical, civil, and mining and metallurgy.

Recent recipients of the medal include Herbert Hoover, Elmer H. Sperry, John J. Carty, Edward D. Adams, Ralph Modjeski, John F. Stevens and Ambrose Swasey.

Admiral Taylor was appointed chief of the bureau of constructions and repair of the United States navy in 1914, and rear admiral in 1917. One of his notable achievements, according to the board, was the reduction by half of the coal bill of the United States navy by the utilization of the bow wave for ship propulsion.

Here and There in Industry

RUST ENGINEERING CO., Pittsburgh, has made a number of furnace installations recently in plants of iron and steel producers, as follows: Two triple-fired, zone controlled continuous billet heating furnaces, gas fired, 15 tons per hour each, for American Steel & Wire Co., Fairfield, Ala.; roll annealing furnace at plant of Aetna Standard Engineering Co., Ellwood City, Pa.; triple-fired bloom heating furnace for the Weirton Steel Co., Weirton, W. Va., with capacity for 30 tons per hour, coke oven gas fired; three triple-fired continuous slab heating furnaces for Republic Steel Corp., Youngstown, O.; continuous bessemer converter bottom drying furnace for the National Tube Co., National works, McKeesport, Pa.

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Scott Pump Co., Rochester, N. Y., has opened a branch plant and shipping headquarters for foreign business at Niagara Falls, Ont.

□ □ □

Monighan Mfg. Corp., 931 North Kilpatrick avenue, Chicago, is adding coal stripping machinery to its excavating lines. The company has benefited this year from the heavy public works programs.

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A. O. Smith Corp., Milwaukee, has placed an order for three heavy cranes for its new shop building, 242 x 225 feet, 100 feet high, with the Harnischfeger Corp., Milwaukee.

□ □ □

Porter-Cable Machine Co., Syracuse, N. Y., has appointed the Harron, Rickard & McCone Co., 1600 Bryant street, San Francisco, its representative in northern California for manufacturing lathes.

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Industrial Furnace Corp., Buffalo, has bought the Hayes Process Corp., Chicago, a former competitor in producing industrial furnaces. H. O. Breaker is president of the Buffalo corporation.

□ □ □

International Nu-Type Tool Corp., Syracuse, N. Y., Herbert W. Stone, president, has taken a purchase option on the David Maydole Hammer Co., Norwich, N. Y. The plan is to merge the companies to give a complete line of tools.

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Milwaukee Parts Corp., 607 South Sixth street, Milwaukee, manufacturing aircraft engines, has increased capital from $53,000 to $150,000 to provide for expansion. The company has received government approval of a newly designed aircraft engine in development more than five years.

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A. B. C. Mfg. & Machine Works has been organized at Tulsa, Okla., to specialize in precision machine work. A. B. C. Dague is owner and manager and Jack Anthony, formerly of Walter O'Bannon Co., oil field tool manufacturer, is shop superintendent. A shop building has been leased at Third street and Frankfort avenue.

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Unit Lock Co., Tulsa, Okla., recently adjudged bankrupt and its assets sold at receiver's sale, has been purchased by Mike Jankowsky, Tulsa, and has been reorganized as the Standard Unit Lock Co. Mr. Jankowsky is president, and H. R. Lorsch is vice president and general manager. Manufacture of padlocks has been resumed.

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Elkhart Press Co., Elkhart, Ind., manufacturer of machinery, machine tools and parts, has reorganized with James E. Loshbrough, Leonard E. Loshbrough and Maud Loshbrough directors. Its capital has been increased from 700 shares of common and 150 shares prefered to 1000 shares common and 500 preferred, all of $100 par value.

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Link-Belt Co., Chicago has completed a plant at Toronto, Ont., and another for its Pacific division at San Francisco, and has started improvements at its plant at Indianapolis. For the latter plant a powdered coal system has been purchased and a building will be erected to house it and necessary alterations made in existing structures.

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Federal Cement Tile Co., Chicago, has bought the American Cement Tile Mfg. Co. and the combined companies will be known as the Federal-American Cement Tile Co. General offices will be maintained at Chicago, with sales offices in principal cities. The combined companies have plants at Hammond, Ind., Lincoln, N. J., Wampum, Pa., and Birmingham, Ala.

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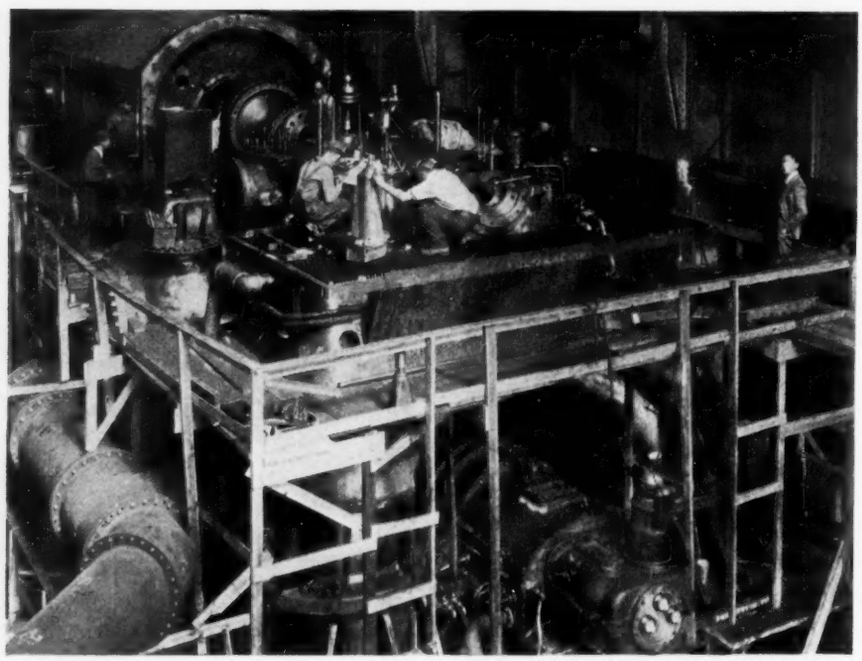
H. A. Brassert & Co., Chicago, engineers, have taken an order from Inland Steel Co., Chicago, for graduated filler brick inserts to convert the stoves for its No. 4 furnace into high efficiency stoves. This company also has taken an order from



HIGH AND LOW PRESSURE IN LARGEST INDUSTRIAL TURBINE

Assembling the 1200-pound, high-pressure element of the 110,000-kilowatt, vertical-compound turbogenerator for the Ford Motor Co., at the Schenectady works of the General Electric Co., for factory tests. The double-flow, low-pressure turbine and generator are directly beneath the high-pressure turbine and generator. This is said to be the largest industrial turbogenerator, the largest vertical-compound machine, and the largest turbogenerator to operate on 1200 pounds steam pressure. Two older generating units, rated 12,500 kilowatts each, will be moved out to make room for the new machine which will occupy approximately the same amount of floor space.

the Bethlehem Steel Co. for three 24 x 100-foot high efficiency hot blast stove linings for its Johnstown, Pa., plant, the third set for this plant. Bethlehem Steel Co. has also ordered four 22 x 100-foot linings of the same type for its plant at Sparrows Point, Md. Tidal Refining Co., Tulsa, Okla., has bought from the Brassert company an Askania automatic combustion control.

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Joseph Schonthal Co., Columbus, O., has bought the property of the former Scioto Valley Railway & Power Co., including rails, rolling stock, powerhouse and equipment and overhead equipment. In consists of about 70 miles of 70-pound rails and the same length of 100-pound third rail. The line will be dismantled and the salvaged materials sold.

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Portland Concrete Machine Co., Chicago, has moved its headquarters to Cleveland, and has established offices at 4519 Hamilton avenue. Clarence B. Dutton is president. The company is a subsidiary of the Industrial Brownhoist Co., Cleveland, and manufactures machinery for ready-mixed concrete plants and for production of blocks, tile and other concrete products.

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General Grinder Corp., Milwaukee, has been incorporated with $25,000 preferred and 250 shares of common stock to manufacture tool grinders and other mechanical devices. A factory is being established at 248 Milwaukee street and the initial equipment has been orderd. Van B. Hooper, former general sales manager of the Master Lock Co., Milwaukee, is at the head of the new company, and Louis V. Shaw has charge of production.

□ □ □

William F. Eichfeld & Son Co., Milwaukee, recently incorporated with an initial capital of $25,000 to engage in the structural and ornamental steel business, has taken over an existing shop, 50 x 116 feet, at East Pittsburgh avenue and Barclay street and is now making extensive alterations. Complete new equipment is being purchased. William F. Eichfeld, head of the new company, formerly was vice-president and general manager of the A. F. Wagner Architectural Iron Co., Milwaukee.

□ □ □

Ashey Mfg. Co., Worcester, Mass., has been formed and will establish a plant for the manufacture of stamped metal and other products. The company is composed of John P. Ashey, formerly vice president of the Rockwood Sprinkler Co., Worcester; Harold C. L. Ashey of the same company; Hjalmar G. Carlson, formerly superintendent of the Rockwood company and an expert in metal drawing. The Rockwood Sprinkler Co. recently was absorbed by the Gamewell Co., manufacturer of fire alarm systems.

Pittsburgh Dealers Move To Curb Scrap Evils

Pittsburgh chapter of the Institute of Scrap Iron and Steel Inc. has authorized appointment of a special trade relations committee from its membership to co-operate with mills in adjusting complaints with reference to rejected cars alleged to violate the code of business practice. This action follows formation of similar committees in the Chicago and St. Louis districts where the plan has been put into effect.

The committee will entertain complaints, inspect the scrap and seek to eliminate the causes for complaint by educational means.

Gary Church Dedicated

Gary Memorial Methodist church, erected in the last year at Wheaton, Ill., at a cost of $300,000, to replace one built in 1901 by the late Elbert H. Gary, chairman of the United States Steel Corp., in memory of his parents, was dedicated recently. The former church was burned in 1929.

Elevate Chicago Tracks

Chicago—Santa Fe and Pennsylvania railroads have agreed to complete track elevation in Chicago soon, as a result of agitation by the city council, as an aid to unemployment distress. The cost of the Santa Fe elevation is set at $2,500,000, and Pennsylvania $4,600,000. Pennsylvania's plan includes 24 subways. Chicago & Western Indiana and the Nickel Plate roads, whose track elevation contracts also are behind schedule, have not reported.

Monthly on Die Casting

Allied Die Casting Corp., Long Island City, N. Y., is publishing a monthly magazine devoted to the art of die casting, which is being distributed without cost to those interested. It treats of details of this branch of industry and has an educational mission among executives and others in touch with production of castings from permanent molds. Its mission is to aid increased production in industry.

Would Zone Scrap Yards

Indianapolis—An ordinance to regulate junk yards, hide dealers and paper stock buyers, requiring them to locate only within a specified territory, has been prepared for introduction to the city council at Marion, Ind. Residents in the vicinity of business of this sort have appeared before the council asking that some regulatory measures be taken.

Upson-Walton Co., Cleveland, has been awarded 13,500 feet of wire rope for delivery to the United States engineer, Savannah, Ga., bids having been taken Aug. 25.

Executives Inspect Industrial Research

INSPECTION of leading industrial research laboratories was made recently by a party of 100 executives and bankers under the auspices of the division of engineering and industrial research of the National Research council. Plants visited included those of the American Rolling Mill Co., Middletown, O., Aluminum Co. of America, Pittsburgh, Mellon Institute of Industrial Research, Pittsburgh, General Electric Co., Schenectady, N. Y., General Motors Corp., Detroit, United States Air service, Dayton, bureau of standards and National Canners' association, Washington.

At Middletown, O., where the accompanying group photograph was made, officials of the American Rolling Mill Co. entertained the party by an inspection of the new continuous sheet mill and the company's large laboratories where research in progress was explained and development of the department was outlined.

MIRRORS of MOTORDOM

DETROIT

TRITE as the expression is, the automobile industry bumps along production bottom established in July, certainly getting no worse, but showing no immediate revision upward. Detroit's talk is mixed; some feeling the auto industry and its appendages have drunk too deeply of the mob psychology spirit in declaring this—a 3,700,000-car year—indeed a poor season; others genuinely agreed on 1930 a write-off; but all concurring that Detroit seems resigned to its seasonal fate until a marked trend upward next spring.

Chevrolet's impending production on 1931 lines should buoy November production totals to probably equal October, which no doubt will run the same as the September aggregate.

Less alarming is the present bear stock market, for Detroit places less significance in its effect on business, feeling that declining values and light trading reveal the liquidation largely of the small investor who now sells at the market for needed cash.

Detroit was surprised at the September production aggregate and that it held its own with August, even going so far as to wonder where they went. With cheaper gasoline, cars in numbers are whizzing by on the streets these days—the replacement field looms larger for next year.

Ford's Engineers Busy on Rumored Light Eight?

Gossip runs strong that Ford is in line for a model innovation to supplement the present four-cylinder model and rumor oft-repeated from many corners concentrates on an 8-cylinder car. Motor dies for a light eight are generally agreed to have been in existence for a number of years at Fordson but now production dies come into the picture.

Ford's engineering laboratory and staffs run full blast seven days a week; the experimental departments spare Sundays and work six days weekly. Briggs Body is working on an all-steel body for them.

Meanwhile, production on model A goes ahead at the 3-day a week schedule, the average running daily at close to 4500 units. Open hearths and rolling mills are again on, though they run intermittently.

Expect Hurdle Over Six; Ford Curtailment Hurts

Detroit thinks it logical that Ford, if it will jump to multiple cylinders, will go from the four to an eight field, sparing the six with all the advertising Chevrolet has done in this cylinder market. Regarding the eight again, a rumor, unverified, puts the coming car due within the next six months, that it will be 52 horsepower and sell around $700.

◆

Ford today is feeling curtailed production perhaps more now than at any other time this year. When others were slowing Ford ran its five days weekly but its October figures will show a falling off from September. In the latter month the 70,000-unit level assembled during that period was a repetition of August, explainable, however, by assembly of a large number of stocked parts and not to manufacturing operations in September.

Before the end of the year Ford will have two new assembly plants to swell its total. The Walkerville, Ont., plant, slower than many of the rest, will work only eleven days in November and on Oct. 10 had but 21 more working days in 1930. Ford at Fordson, as is general, goes down over the December holidays, and talk continues of a longer vacation than that.

Latest of the Fords to join a growing de-luxe group is a four-seat coupe which will be announced before long. Similar in style to the present business coupe except that the back seat is moved slightly to the rear, it incorporates a folding fourth seat abreast the driver's wheel.

Now, will Henry Ford's return from Europe put an end to humming operations in his experimental and engineering units?

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Chevrolet is on the eve of production on new lines. Its claim of 1000 units daily, 3 days, on the 1930 lines is largely tempered among local opinion, for the plants are now in midstream setting up quantity assembly on the coming car.

Delays in Chevrolet's production schedules have put the arrival later than counted on by both management and public. First set at Nov. 1, then the 15th, units will be coming off the assembly line later than the latter date—however, before December is half gone. Assembly of motors has been completed. For the running month or 30 days, dated from when production does actually get under way, approximately 45,000 cars will be produced.

Chevrolet Body Units on Eve of 1931 Production

Steel sales offices continue to get good releases from Chevrolet. Many look for slight changes in what is agreed will be more of a "dressed up" job that notably will have a smoother running motor and a slightly longer body. Hovering in the background is a shrewd guess on the part of several, that Ford price cut is due around the first of the year.

Ten body plants of the Fisher Body Corp., scattered throughout the

country, which have been working on a 3-day week schedule, have returned to the 5½-day week, busy on Chevrolet work. The ten plants involved hiring from 6000 to 7000 men, will take on no new employes. There is no change in operation in the Detroit Fisher plants.

Martin-Parry Corp., York, Pa., recently acquired by General Motors, will turn over its Indianapolis plant to the Chevrolet unit for the output of Chevrolet trucks and commercial models.

Reo, Buick Holding Unchanged in Production

Buick only turns over at about half capacity with daily production at 450 units maintained through the 5-day week. Production has tapered to about half what it was when the new model was announced in midsummer. Dealer stocks are considered normal. The October schedule at roughly 10,000 units has been revised a shade heavier.

Packard, doing 100 daily, 5 days, may have a model in the offing for next year with several features some say are akin to the new Reo 8. Rumor goes on to add that such a unit has already been prepared and tested by Packard engineers and awaits sanction of the directors' board.

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Reo itself, busy on the recently announced eights, made over 625 units last week. Its striking appearance is acknowledged locally and copies of many of its outstanding features are generally predicted, according to local gossip, to come from other producers, similar to the way LaSalle for one was copied some years back.

But all Detroit wants, and it feels the country does too, are cheap cars in the Ford and Chevrolet class, and the luxurious high-priced units. And Reo, cutting into the latter field as it does, finds keen competition.

General Motors and Ford will turn out 70 to 80 per cent of 1930's automobiles—and Detroit thinks no one can deny the wide selectivity of the Cadillac-LaSalle division—just as one producer among the costlier models.

The new Reo fender design, rolled in, streamline and thereby wind-resisting, according to someone's ingenious calculations, increases its speed 3 miles per hour.

◆

Nash, working on new sixes and eights, does 450 daily.

Studebaker, 3 days weekly, does 900 a week.

Oakland and Pontiac are quiet. It is forecast that the new Oakland will have synchro-mesh gears and undoubtedly will have a chrome screen-grid radiator shield after the fashion of Cadillac and the coming Chevrolet. Pontiac proposes to build 10,000 cars, largely to stock dealers.

Hudson-Essex is still quiet, its plant further curtailed in production. There have been several changes in personnel at the plant itself and the general reorganization spirit permeates further into its distribution channels where sales organizations have in many instances been superceded by plant officials.

Murray is on some Hudson body work. The 1931 model is expected to be before the public by Nov. 15 and if one can accept the local stamp of approval, Detroit looks for Hudson-Essex to be heard from in relatively good year in 1931.

Durant and its Mathis, the proposed miniature car halfway in size between an Austin and Ford, is temporarily lulled to the background with lack of publicity now that Austin production is down at Butler, Pa. Nothing additional in parts has been heard since Durant specified 500 motors for the bantam from Continental, and locally a question mark is growing in size when the newcomer's name is announced.

◆

The advent of speed to the motor world has brought a new problem to manufacturers. Several producers, and especially Cadillac on its new V-16 model find trouble with adequacy of present brake drums, and with such speeds and power as the new model possesses, it is no wonder that the management finds present brake manufacture and materials inadequate.

The problem faces several, though Cadillac takes the lead, with some thought of turning to a cast iron drum. A cold-rolled strip proposition is also in the fore where with closer size tolerances and a surface smoothness present troubles might be eliminated. However, cost of the latter steel may prove a stumbling block when compared with the now generally used brake plates.

Ford Slow in Going to Strip for Radiators

Another manufacturing news wrinkle lies in Ford's apparent half-hearted application of rustless strip instead of sheets for model A's radiator shell. Motor Products is making shells from strip for Ford, with a weld insert at the bottom, but the Fordson plant continues with shells made of sheets, formed and drawn. But perhaps stocks, generally understood to be large in this line, are being consumed first at Fordson, by way of explanation.

Cadillac-LaSalle have been adding more men and though the V-16 Cadilla is temporarily off the assembly lines, it is due to need of production room for the new 12-cylinder and fairly large stocks of the former. With Cadillac's troubles in braking has come the report that the new 16.'s have been causing similar disturbances with tires and that a problem therein also awaits solving.

Lincoln is on the verge of a model aimed at competition more closely with the Cadillac, some say to have a longer hood for one outstanding feature. But in what type motor that hood houses lies room for much speculation.

Chrysler Reported to Favor Dodge Model Change

Chrysler still slowing, leans on Plymouth as its best seller, though the latter produced only in the neighborhood of 5000 cars last month. Dodge, another subsidiary, turned out but 1500 in the same time, and it is generally agreed is in line for something in the way of change to its existing model. Stocks of this unit alone, reduced considerably over the past two months in particular, are being squeezed further to a bare minimum.

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For an unnamed builder, or it may be builders, a sixteen cylinder motor and a front-wheel drive are talked of . . . Fisher is removing gradually all its body units from Detroit except the Fleetwood division . . . Briggs Body office force is back on the 5-day week, compared with the former 3-week month . . . Willys-Overland production is down and another generally conceded in the "squeeze" includes Graham-Paige . . . General Motors Truck at Pontiac works three days a week . . . Detroit freely admits recently-orphaned cars as the sixes of Chrysler and Reo are good buys. . . Present depressed motor stocks tell some strange tales: Chrysler, at present market prices has stock outstanding valued at $90,000,000, yet several years ago the Dodge unit alone was bought for $144,000,000. Hudson claims to have cash and securities within $4 a share of the market price of its stock, making its plant and equipment apparently valued at just that margin . . . White-wash sales signs on used cars for sale in vacant lots are numerous with the evident desire to clean up before winter sets in . . . In six of the first nine months of 1930, retail sales of General Motors cars and trucks in this country exceeded plant shipments to dealers. Dealers stocks of new cars were reduced more than 50,000 units . . . Mayor Murphy, vigorous in efforts to solve the local unemployment problem has received a commendatory letter from President Hoover for efforts in registering 115,000 unemployed . . . Contrasted to the depression of 1921, motor companies have not found it necessary to offer preferred stock or bond issue.

EDITORIAL

Moderation Urged as Keynote for Steel Industry

THROUGHOUT the rank and file of the steel industry it is customary to look to the fall meeting of the American Iron and Steel institute for guidance in the conduct of business. Past experience has showed that the presence in New York of several thousand influential executives of the industry brings about an interchange of views which reveals with unusual accuracy the real pulse of business.

This year interest in this feature of the meeting was accentuated because of the unusual difficulties which confront the steel industry. Practically everyone who spoke at the morning and evening sessions touched on some phase of the present depression. Those who referred to the immediate situation did not attempt to minimize its seriousness. Their size-up of business conditions was exactly what one would expect from executives who are close enough to the firing line to know the hard facts, but still are sufficiently removed from detail to be able to view the various factors in the proper perspective.

Mr. Farrell, from his vantage point at the head of the largest producing interest, declared that the industry should be operating at from 70 to 75 per cent of capacity and that failure of the industry to attain that rate is due to "competition of cutting price, too much talk about unemployment and internecine warfare between the steel people."

Revival Depends on Co-operation

"We can resuscitate the steel business from the parlous state it is in at present to a revival within 60 days if we co-operate," he said. "Co-operate. It is a word that you feel like throwing overboard because it has been kicking around for a quarter of a century, but there is a definition of co-operation and that definition is honesty in business."

Mr. Schwab, president of the institute, speaking from a half-century of experience in the industry arrived at somewhat the same conclusion when he declared that "business common sense demands that we keep a sane and balanced view in our selling policies." "This industry," he said, "has always proceeded on the basis that as methods of manufacture improve the public will get the benefit of economies in an orderly lowering of prices. That is an entirely different process from the distinctive competition which we experienced in the earlier stages of recession. . . ."

"It is good business not to create unreasonable capacities. We shall always go forward in increasing our capacities in line with the reasonable demands of our business. But I want to sound again the warning note which I have mentioned in the past, namely that if we plunge headlong into a program of unreasonable expansion only one thing will result—over-production."

Greed for Tonnage Demoralizing

Mr. Farrell's plea for co-operation and Mr. Schwab's warning against destructive competition and unreasonable expansion amount to the same thing. Their declarations may be construed as meaning that these two leaders of the industry now believe thoroughly that greed for tonnage is a demoralizing factor in the industry. In reality they are urging moderation—not only in the solicitation of orders on price but also in the building of new plant facilities.

Moderation is a difficult trait to acquire. In the business world, as now constituted, it is more difficult to exercise moderation than it is for individuals to practice it in their daily lives. Business has been exhorted on so many occasions to exercise aggressiveness other forceful traits that many of its leaders will find it hard to accept the doctrine of moderation.

But moderation must come. The break-neck speed with which industry constantly has tried to break records is destructive when efforts to maintain that speed do not take into account the economic limitations of the situation. There is a time for speed and there is a time for deliberation.

Moderation cannot be legislated into an industry. It cannot be forced upon executives through adoption of a code of ethics. The only way it can be made a constructive force in the steel industry is through education and force of example. If a sufficient number of influential leaders make it known that moderation is to be the keynote and if by their own action they lead, then others in the industry will follow.

Practically every important achievement in the internal relations of the companies identified with the steel industry has been accomplished in this way. Self-discipline is one of the greatest needs of American industry today. The steel industry has demonstrated in the past that it can marshal its forces for constructive collective action. Here is an opportunity to establish moderation as a guiding thought in business administration.

Business Leaders in Chicago Conference Predict Great Trade Revival

Review Conditions in Basic Industries—Agree High Standards of Living Must Be Maintained—See Need for Modification of Antitrust Laws

WHILE nation-wide efforts to create jobs for the unemployed became more intensified and better organized during the week, a group of industrial leaders met in Chicago to submit the facts regarding their industries and to appraise the whole situation from a mutually helpful viewpoint.

The consensus of opinion is that a trade revival is in sight, but certain factors must be guarded against lest the restoration be delayed or irreparable harm be done to the business interests of the country. Practically all declared for the maintenance of wage rates and a high standard of living, holding fast to the highest ideals until the storm blows itself out. Some modification of antitrust laws was advocated. The conference was held at the University of Chicago, under auspices of the Institute of American Meat Packers in co-operation with the Chicago Association of Commerce and the Commercial and Industrial Clubs of Chicago.

Following are summaries of the outstanding statements made by representatives of the respective industries.

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Electric Industry Fighting off Government Ownership

MATTHEW S. SLOAN
President, New York Edison Co.

CENTRAL station companies have grown to a present-day investment of $11,000,000,000, with a generating capacity of more than 30,000,000 kilowatts and serving more than 24,000,000 homes and work places.

From January, 1928, to the end of July this year, the average sales price of electric service to domestic users has declined from 6.55 cents to 6.04 cents a kilowatt hour, or 8.5 per cent. In the current year it has dropped 2.3 per cent.

American large-scale and low-cost production and high wages have been directly related to America's reservoir of electric power. Behind each worker is 5 horsepower of energy.

The greatest development of the electric utilities, their greatest usefulness to business and homes, have come about in this period of state regulation. Now we are being told that regulation is inadequate to deal with the problem it meets; that it has broken down; that it must be extended; that it must be supplemented by federal regulation and that there should also be government operation of certain great power sources as a yardstick by which to measure the utilities' performance.

Government ownership and operation means political ownership and operation and the question now is whether the future electricity supply of the country is to develop in accordance with economic principles or political practices.

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Oil Industry Pins Hope on Conservation Program

R. C. HOLMES
President, The Texas Co.

THE oil industry is suffering to some extent from the distress in other lines, but more largely from causes within its own activities.

It is roughly estimated the waste in the producing branch of the industry alone in a period of a little over 20 years has been upward of $4,000,000,000, calculated at approximately 10 trillion cubic feet of gas, over 2,000,000,000 barrels of recoverable oil and approximately $1,000,000,000 in unnecessary drilling facilities and other expense which could have been avoided had the business been carried on in an orderly, economical and conservative way.

To a large extent this waste continues, probably the greatest being in the waste of gas, which waste is now fully one-third of the quantity being consumed.

While the multiplicity of facilities, particu-

larly distributing facilities, have been and are wasteful, progress has been made in putting into effect the code of practices for marketing refined products adopted generally by the industry about a year ago.

The principal problem of the industry lies largely in the difficulties of adjusting and reconciling itself to the actual conditions of conservation and, to some extent in a lack of confidence that the industry is actually embarked upon a permanent and definite policy of conservation.

In the aggregate, these influences, with others, have brought about an average gasoline price in the United States, exclusive of state taxes, about 5½ cents per gallon below the average for the years 1921 to 1928, inclusive, and crude prices which are lower than any yearly average for the past 12 years, except 1928.

Conservation is now a well-established policy of the federal government and of the oil-producing states and the oil industry is in a situation where it can well afford the strictest conservation observance. Additional supporting legislation in connection with conservation would be necessary in some instances, and also changes in antitrust laws.

Regardless of stock market quotations the intrinsic values in good sound oil companies have not been lowered.

Railroad Credit Restored; Further Competition Feared

W. B. STOREY

President, Atchison, Topeka and Santa Fe Railway

THE business of 1929 gave promise of giving the 5¾ per cent rate of return, but the slump in the fourth quarter intervened. This year, with its decrease in the handling of all products, will have a marked effect on earnings, despite drastic curtailment of expense by postponement of necessary maintenance.

Efforts to establish credit have been a success, but the effect of this year on the ability to raise money has been evident. The continued failure, even in years of high prosperity, to earn what has been legally declared to be a fair return, make the roads hesitate to continue the expenditure of money for enlargements and also, must ultimately cause the financial interests to ask higher rates for loans to railroads.

While there is no general reduction in freight rates, there is a constant nibbling away of the structure which is being sadly affected.

The automobile has taken much of the railroads' short-haul passenger business, and the truck and bus now are taking not only short-haul but much long-haul freight. The pipe lines in the past have carried most of the crude oil in the country, but the refined products have been carried by the railroads. More pipe lines are being built to take gasoline.

Government aid for waterway transportation has taken considerable business from the railroads, and if these influences continue disaster to the railroads will follow.

Antiquated Antitrust Laws Must Be Modified

GEORGE M. VERITY

Chairman, American Rolling Mill Co.

INDUSTRY must maintain present high standards of living and improve them when and where it can. Mass consumption must follow mass production or our whole industrial fabric will have to be remodeled along other lines, and our economic life entirely changed.

When the public at large comes to a full realization of the importance of greater stability in production, and how impossible it is for industry to do anything in a co-operative way to control that important factor, because of existing antiquated antitrust laws, it will demand a sound modification of these laws.

The cost of these periods of readjustment is not, however, all loss, as they give opportunity for general housecleaning, for the reduction of overhead built up in more active times, for improvement in costs and for increase in general efficiency. Business is bound to be basically sounder as a result.

With plants improved, costs reduced and efficiency at its best, the steel industry is impatient to go, and go it will within a comparatively short time.

Tire Industry Sees Large Replacement Business Ahead

HARVEY S. FIRESTONE Jr.

Vice-President, Firestone Tire & Rubber Co.

IN 1930 there will be a production of 830,000 tons of rubber and a consumption of 665,000 tons. Today the world's stock on hand is 450,000 tons, more than double the stock in 1925.

The price of rubber today is 8 cents per pound, the lowest in its history.

Rubber and fabric together account for over 75 per cent of the total cost of materials in a tire, and as manufacturing costs have steadily declined, they form the major part of the total cost. Serious inventory problems have confronted the tire manufacturer in addition to the natural problems of a rapidly growing industry.

In 1913 a tire builder could produce an average of ten tires in ten hours. Today in the same number of hours he can make 100. The rubber industry has grown until today it does a $1,000,000,000 business yearly.

The industry's great problem today is the readjustment taking place in the field of merchandising and distribution. Another problem has been that of excess capacity with its attendant evil of excessive price competition. However, the condition of over-capacity is now well on the way to correction.

This year 55,000,000 tires will be sold; last year over 70,000,000 tires were sold. An unusually heavy replacement tire business is now in the making. For this reason, coupled with the fact that rubber and cotton are at the lowest price in history, removing any reasonable possibility of inventory losses, the rubber industry looks forward to a successful and prosperous year in 1931.

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Farmer Looking Less to Government, More to Self

L. J. TABER
Master, National Grange

AMERICAN agriculture has suffered continued economic inequality. The plant of American agriculture in a ten-year period has declined more than $20,000,000 in value.

In addition to that, its net income has been declining, and agriculture has seen mortgage indebtedness mount and foreclosures increase; so the current situation finds it is aggravated by a ten-year period in which agriculture has not been able to keep step with other changes that have taken place.

The drought has been more serious than usually understood. The apparent loss runs into at least $1,000,000,000.

The average dollar-and-cent income of the farmer in 1930 is about 8 per cent above prewar, yet the things that he must buy, and taxes, are more than 50 per cent above what they were in pre-war years.

The farmer is looking less to government and to congress and looking more to himself. Until agriculture builds its farmer-owned and farmer-controlled marketing system, it will be impossible intelligently to merchandise the products of the soil.

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Merchants Suffering Less Than in Previous Depressions

ROBERT E. WOOD
President, Sears, Roebuck & Co.

SALES to consumers have fallen off greatly this year. The figures of the federal reserve districts hardly give a true picture, for as a rule they cover mainly the larger department stores of the large cities and not the host of smaller and weaker stores, whose sales are more affected than their larger, more powerful and better managed competitors. Chain store figures and those give the only real comparison.

In this time of stress, however, merchants, both big and little, chains or independents, are showing a much better knowledge of their business than they did ten years ago.

Few merchants have large inventories, and few, in spite of the steady decline of commodity prices, will take any serious inventory losses this year. In 1921 such losses were almost universal and heavy.

Waste, extravagance and useless overhead must be eliminated in every business that is to endure. Wages and salaries must be maintained and living standards must be raised, not lowered. The retail merchant has the liveliest interest in trying to maintain and raise those standards.

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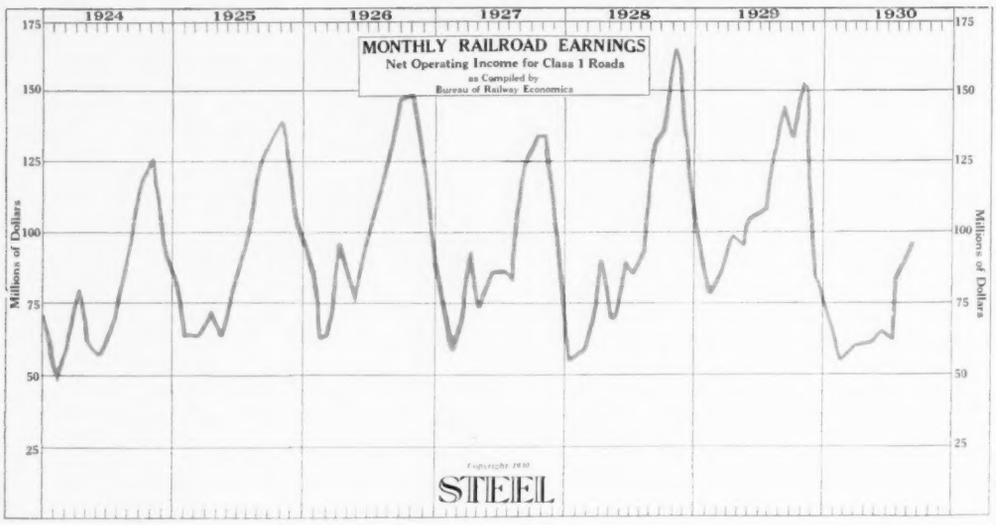
Radio "Fastest Growing Industry in All History"

M. H. AYLESWORTH
President, National Broadcasting Co.

RADIO is the fastest growing industry in all history, due largely to broadcasting. It is the most important factor in the reduction of the farm to city movement. Radio has swept away the web of isolation in the rural areas of the country.

The American system of national broadcasting is here to stay yet many changes will come to pass during the next decade, all of them for the better. Higher power appears to be the trend in broadcasting.

THE BUSINESS TREND



1930 Million Dollars	
Aug.	95.6
July	82.7
June	68.8
May	69.1

1929 Million Dollars	
Aug.	141.7
July	122.8
June	105.8
May	103.6

Duration of Decline Exceeds That of 1920-21

PRESSURE not unlike that witnessed during the hectic days of the World war is being employed to save the nation from threatened hard times during the approaching winter months. The action of federal, state and local authorities to relieve suffering has gained momentum during the past week. If it continues at the present pace for a few weeks longer, the results may be impressive enough to convince pessimists that there still is a wealth of reserve vitality.

Such a demonstration might serve as a useful tonic to business, which now is suffering from a bad case of nervousness. Business sentiment is far more depressed than actual business activity. The stock market behavior still wields a terrific influence and those who believe it reflects business conditions naturally are blue.

September's Expected Upturn Disappoints

In reality, business is at lower ebb than was anticipated by even the most conservative prophets. Practically everybody shared the belief that seasonal expansion in September and October would bring about an improvement. As a matter of fact, the events of the first three weeks of September seemed to indicate that this expected seasonal upturn was under way. So convincing was this recovery that many experts were encouraged to say that the low point of activity was passed in July or August.

But when complete statistics for September were scanned, they presented a disappointing panorama. Steel ingot and pig iron output dropped. Car loadings were up slightly. Orders for machine tools, steel sheets and foundry equipment increased, but bookings for steel castings and structural steel dropped. Automobile production slumped slightly; building construction gained a shade; business failures increased moderately; and foreign trade swelled appreciably, but from a very low level.

From this confusion of testimony it is difficult to determine just how far business back slid last month. Certain it is that some of the momentum gained early in the fall has been lost in the recent relapse in industrial activity.

Steel Prices Decline Through 17 Months

The repeated postponement of marked business recovery suggests the question as to how the present period of decline compares with that of 1920, 1921 and 1922. In that period of postwar deflation steel ingot output dropped from a high point of average daily production in March, 1920, to a low point in July, 1921. Exactly 16 months intervened before the high and low points. The present decline was from a peak in June, 1929. Sixteen months now have passed; therefore if October shows a further decline in average daily output, the duration of the present decline will exceed that of 1921.

A similar situation exists in the case of steel and iron prices. STEEL's composite dropped from a pinnacle in September, 1920, to a low in February, 1922—seventeen months. The peak in 1929 was recorded in May. Seventeen months have passed and inasmuch as the average for October will be lower than September, we can state definitely that the duration of the present decline already has matched that of the 1921 recession.

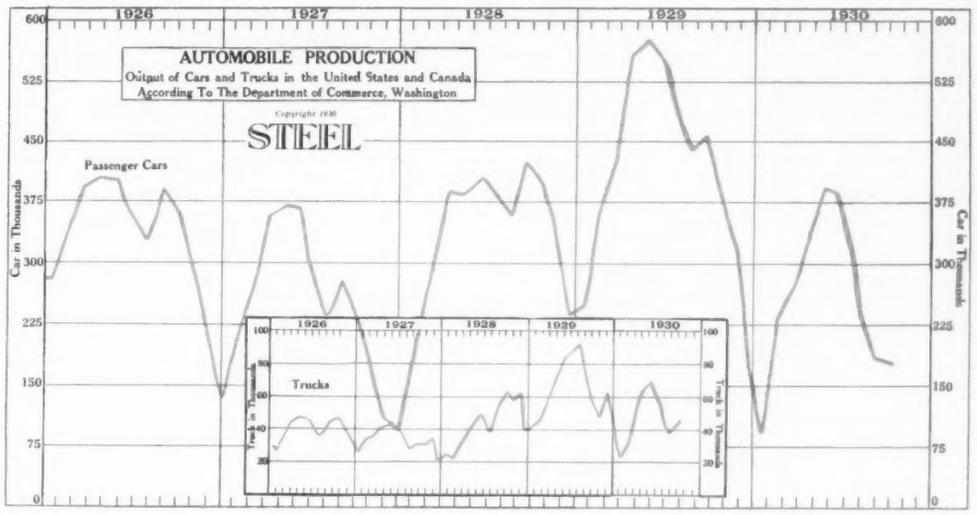
These comparisons are significant in that they reveal the tenacity of the factors responsible for the present difficulties. The recent decline in prices has been much more gradual than that of 1921 and it is probable the rise, when it comes, will be similarly gradual. On the other hand steel ingot output has dropped more sharply since 1929 than it did in 1921.

Passenger Cars

	1930	1929
Sept.	186,579	375,046
August ..	194,234	452,857
July	231,256	439,598
June	301,898	469,260
May	384,287	541,310

Trucks

	1930	1929
Sept.	44,309	54,683
August ..	38,606	59,985
July	41,295	78,703
June	48,669	98,164
May	57,791	94,940



Drop in September Auto Production Less Than Expected

Those who have been discounting the estimates of the Automobile Chamber of Commerce on automobile production as being high received a shock when the department of commerce figures for September showed an output of 230,888 units. The estimate had been 226,361 units. September production was only 1952 lower than that of August—a much smaller decline than was anticipated. The nine-month total stands at 3,066,513 compared with 4,864,676 in the corresponding period last year. Cars still are moving slowly from distributors and it is possible that production is slightly higher than warranted by demand. Builders are proceeding cautiously in planning schedules.

By-Product and Beehive Coke Output Is Lower in September

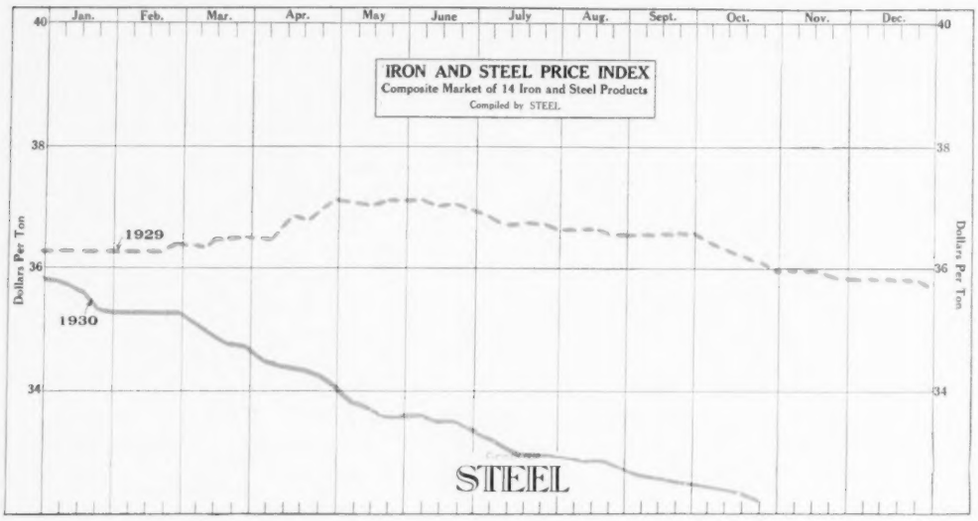
Coke production continued its downward course during the month of September as stocks gained in size. A total of 3,569,517 tons was produced, of which 3,401,417 tons were by-product and 168,100 tons beehive. By-product coke production in 89 plants was at 67 per cent of capacity. Beehive coke is far behind the 504,300 tons produced a year ago, and although by-product coke is only 11 per cent behind 1929 in its nine-months figure, total production thus far in 1930 is 16 per cent below last year. Stocks gained 3.1 per cent during the month, principally at merchant ovens. Stocks at furnace ovens were only 0.5 per cent above a month ago.

By-Product

	Tons
September, 1930	3,401,417
August, 1930	3,637,339
September, 1929	4,413,011

Beehive

September, 1930	168,100
August, 1930	169,500
September, 1929	504,300



Weekly Figures

Oct. 22	$32.14
Oct. 15	32.24
Oct. 8	32.32
Oct. 1	32.62
Sept. 24	32.56
Sept. 17	32.64
Sept. 10	32.68

Monthly Averages

September, 1930	$32.65
August, 1930	32.99
July, 1930	33.21
June, 1930	33.53
September, 1929	36.50

STEEL'S Composite of Prices Continues To Slip Downward

While strip, bars, plates and shapes continued to hold steady, weakness in other quarters of the market brought STEEL's composite of fourteen iron and steel products down to $32.14 as of Oct. 22, ten cents below the previous week, and another new low since 1915. It now appears that the present decline will be of longer duration than that in 1920, 1921 and 1922, when 17 months intervened between the high and low points. By Nov. 1, 1930, the present decline will be entering its eighteenth month. Some few additional adjustments seem imminent and perhaps necessary before the trend of prices will again point upward definitely.

Trend of Building Costs Remains Unchanged in September

September marks the third consecutive month in which building cost indexes have seen wage costs hold at the same figure while material costs and all costs drifted lower. All costs reached the index of 187, after a steady decline which began after 198 had been reached a year ago. Materials dropped another point to 149, as compared with 168 a year ago and 169 in October, 1929, after which the downward trend started. Wage costs held at 244, two points above a year ago, and the high point of an upward swing which began in the spring of 1929, which in turn followed a steady figure of 233 that had prevailed four months.

All Costs

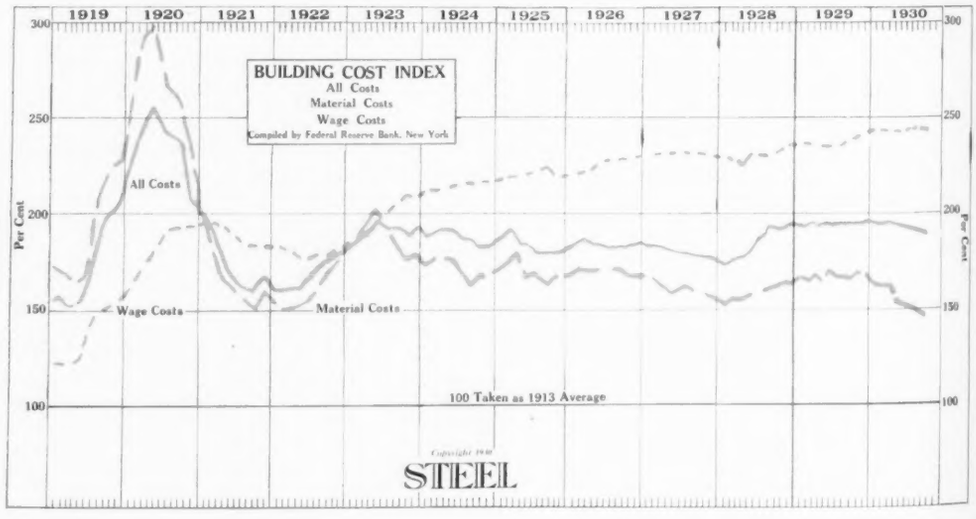
	Per Cent 1930	1929
September	187	198
August	188	195
July	189	194

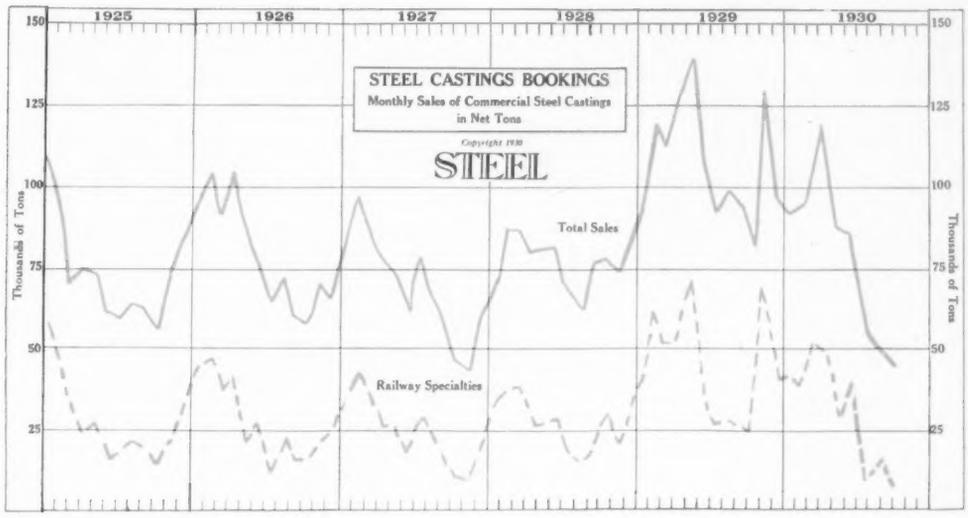
Material Costs

September	149	168
August	150	166
July	153	166

Wage Costs

September	244	242
August	244	238
July	244	236





Total New Bookings

	Tons
September, 1930	49,618
August, 1930	50,516
September, 1929	86,584

Railway Specialties

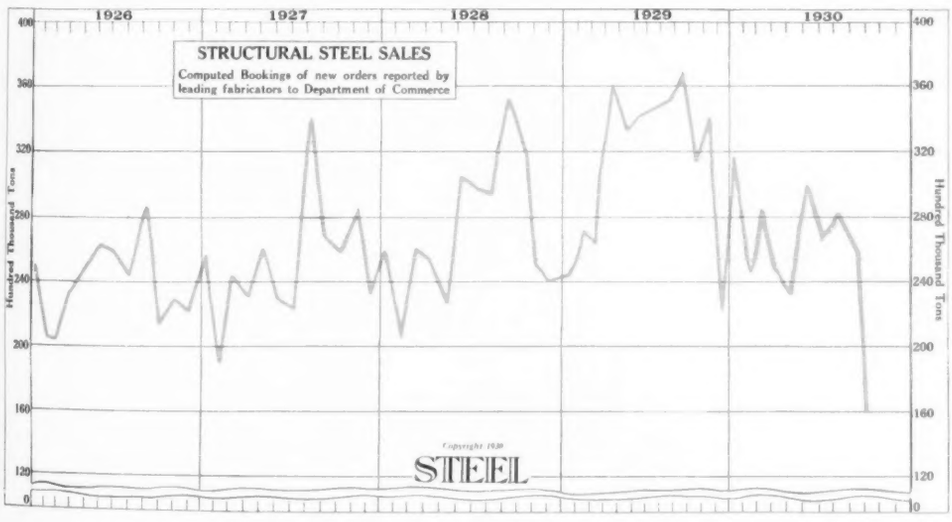
September, 1930	10,345
August, 1930	15,285
September, 1929	33,463

Orders for Steel Castings Shrink Further in September

Bookings of steel castings during the month of September declined slightly for the sixth month, from 35 per cent to 34 per cent of capacity, the tonnages being 49,618 tons for September and 50,516 for August. Railways continued to withhold their bookings and the orders for railway specialties coasted sharply down to 10,345 tons, or 16 per cent of capacity—far under the 1930 peak of 55,310 tons, in February. The most recent high point for steel castings was in March, at 122,658 tons. One year ago bookings were for 86,584 tons or 59 per cent of capacity. Railway specialties were then at 45 per cent of capacity.

Bookings for Fabricated Structural Steel Show Sharp Decline

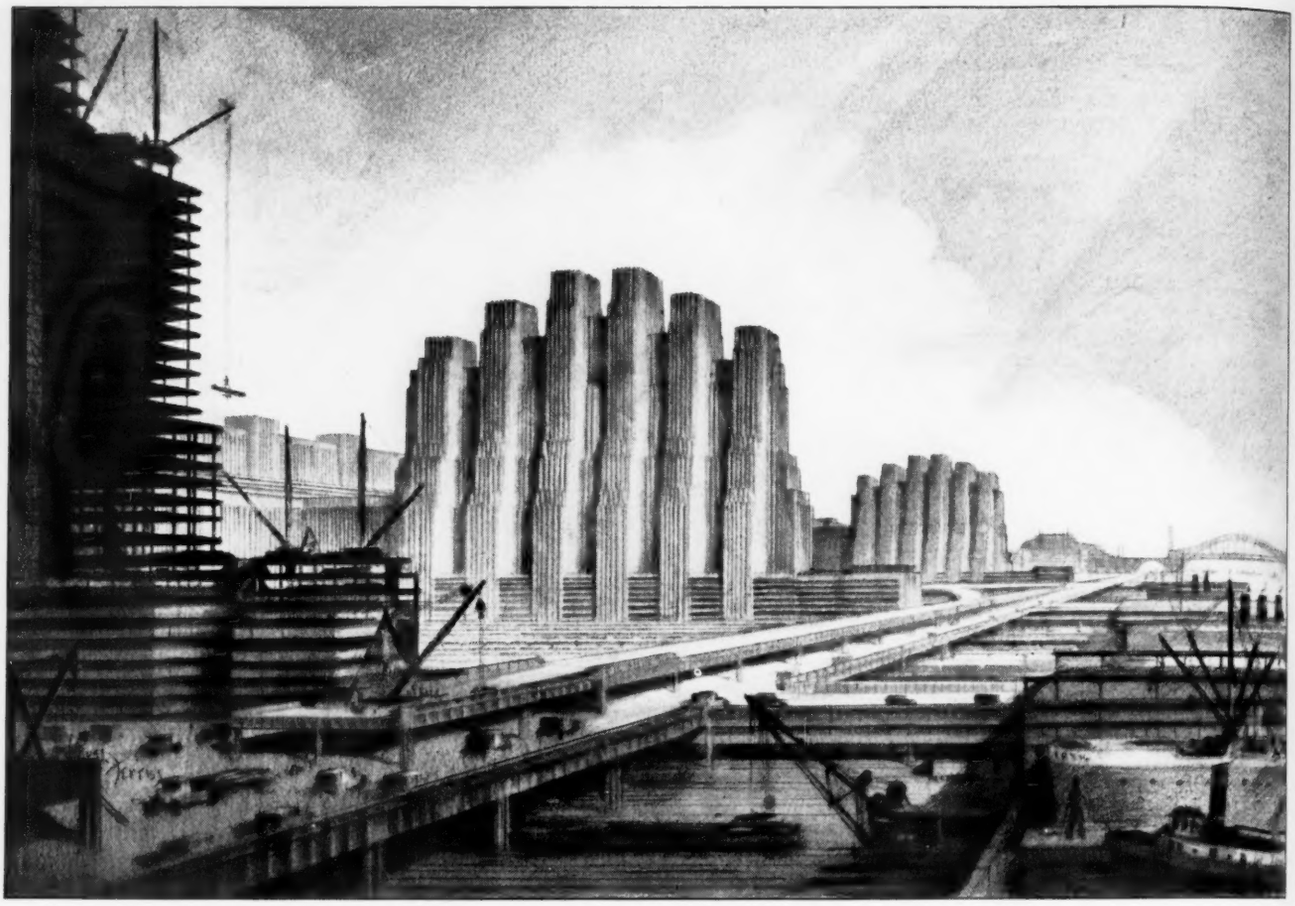
Fabricated structural steel orders for September dropped sharply from the 264,000 tons booked the previous month to 168,000 tons, the lowest since 1923. Shipments meanwhile held up to 260,000 tons, only 20,000 tons less than the figures for August. The September bookings were down 37 per cent from August, and the capacity rate dropped from 66 to 42 per cent. Compared with a year ago, orders for September were off 60 per cent, but the nine-months total for 1930 was at 2,272,000 tons, only 17 per cent below the 1929 nine-months total, 2,758,150 tons.



	Tons 1930	1929
September	168,000	296,450
August	264,000	361,900
July	284,000	350,350
June	276,000	342,650
May	296,000	342,650
Apr.	236,000	334,950
Mar.	248,000	354,200

STRUCTURAL STEEL CREATED THE SKYSCRAPER

THE TIDE OF STEEL RISES FAST



"STEEL SEAPORT"—IMAGINATIVE DESIGN BY HUGH FERRISS. AN ENLARGEMENT, ON SPECIAL STOCK FOR FRAMING, WILL BE MAILED WITHOUT CHARGE TO ANY ARCHITECT, ENGINEER OR BUSINESS EXECUTIVE.

STEEL bears the burdens of the sea . . . facilitates the handling, storage and distribution of cargoes ashore. The same safe metal that makes worthy ships and mighty cranes carries railroads and highways over and under congested city streets, leaps deep gorges, lifts priceless floor-space to the skies. . . . And on this swiftly rising tide of steel, progress rides!

As the matchless strength, adaptability, permanence and economy of steel become common knowledge, there is increasing demand for its use in structures of every kind and size. To homes, schools, apartment and mercantile houses, to industrial plants and small as well as large bridges, steel brings those identical qualities which make possible the most amazing structures the world has ever seen.

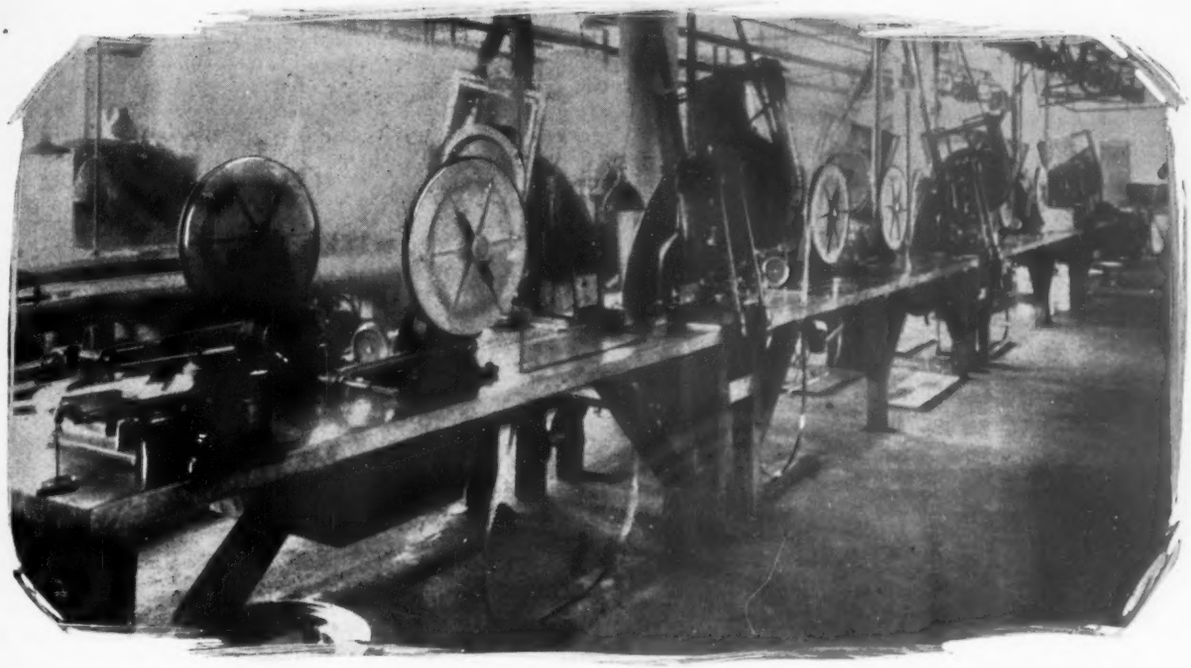
Structural steel will not shrink, rot, crack or deteriorate with age. It is fire-safe, fool-proof. It comes to a job ready to go into place. It is quickly erected in any weather, any climate.

Before building anything, find out what steel can do for you. The Institute serves as a clearing house for technical and economic information on structural steel, and offers full and free co-operation in the use of such data to architects, engineers and all others interested.

The co-operative non-profit service organization of the structural steel industry of North America. Through its extensive test and research program, the Institute aims to establish the full facts regarding steel in relation to every type of construction. The Institute's many publications, covering every phase of steel construction, are available on request. Please address all inquiries to 200 Madison Avenue, New York City. Canadian address: 710 Bank of Hamilton Bldg., Toronto, Ontario. District offices in New York, Worcester, Philadelphia, Birmingham, Cleveland, Chicago, Milwaukee, St. Louis, Topeka, Dallas, San Francisco and Toronto.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION

STEEL INSURES STRENGTH AND SECURITY



Machines used for making the various perforations in strip steel intended for razor blades

Strip Steel for Razor Blades Is Tested Magnetically

BY H. R. SIMONDS
Associate Editor, STEEL

UNIFORM quality of strip steel is highly important in the manufacture of safety razor blades to secure standardized heat treatment on a production basis. By individual treatment, varying as analysis does, uniform results may be secured from a non-uniform supply of steel but this is slow and expensive.

In order to be sure of a uniform supply and thus be able to standardize its heat treatment on continuous operation at high production, the Auto Strop Safety Razor Co., New York, installed at its Newark, N. J., plant complete equipment for the electromagnetic testing of strip steel for its Probak and Valet blades. This equipment is given much of the credit for the success the company has had in producing uniform high-grade razor blades and as it is one of the first commercial installations for the nondestructive testing of strip steel, unusual interest is attached to its use.

The unit consists essentially of three step-down transformers so arranged that any two of them may be electrically opposed and the current differential from the secondary winding measured on an oscillograph. The specimens to be tested are placed within the windings of the transformers to serve as cores. Under such an arrangement experience has shown that the differentials oscillogram offers a means of accurately comparing one specimen with another and by using a known standard in one of the coils it is possible to ascertain accurately and without further examination such important characteristics as microstructure, carbon segregations, defects, heat treating results and carbon content. The best results are obtained when the characteristics of the standard piece conform closely to those of the unknown specimen.

The oscillogram shown in Fig. 2 was produced by perfectly sound razor strip. The photomicrograph shows the structure of the steel producing the graph. Incidentally, this is the structure which is regarded as standard by the Auto Strop Safety Razor Co. The upper curve is the normal wave unamplified while that below is the same curve amplified.

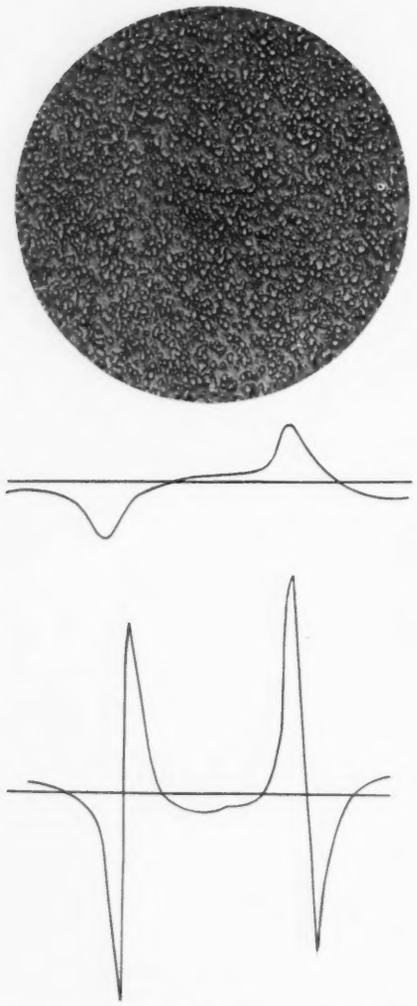


Fig. 2—Photomicrograph of strip steel for razor blades (X600) which shows the structure of the steel producing the top oscillogram. The lower curve is an amplification of the upper wave

Any oscillogram may be amplified as desired by a control lever on the producing apparatus. Such amplification is valuable in a more accurate and detailed study of steel characteristics. Fig. 3 shows the harmonics produced by carbide segregations, the photomicrograph of the specimen showing the actual segregations. But photomicrographs have an amplification of 600 and show specimens etched with 2 per cent initial.

Fig. 4 shows the effect of heat treatment. The curve at the upper left is that of razor strip steel quenched from 1500 degrees Fahr. and not drawn. The curve at the lower left is from the same steel quenched from 1540 degrees Fahr. and not drawn. Curve at the upper right shows the same steel quenched from 1500 degrees Fahr. and drawn to 320 degrees Fahr. The curve at the lower right shows the same steel quenched at 1500 degrees Fahr. and drawn to 400 degrees Fahr. A comparison of the two curves at the left illustrates the decrease in permeability due to an increase of but 40 degrees Fahr. in quenching temperature. On the other hand, a comparison of the two curves at the right shows the increase in permeability due to 80 degrees Fahr. increase in drawing temperature with the quench temperature constant. From oscillographs such as those shown the experienced operator can detect true hardness as a function of the steel's actual physical state.

In brief, the apparatus consists of a table about the size of an ordinary desk on which the three transformers are mounted. Slots are provided through the center of each transformer for the insertion of the specimen, and suitable switches and instruments are mounted near the transformers. The oscillograph machine is in a separate room some 15 or 20 feet away which is darkened to give greater visibility to the graphs and to aid in making photographic reproduction. Normally the oscillogram appears as a white line on a frosted glass surface. This line is produced by the deflection of a stream of electrons, actuated by the differential resulting from the opposed transformers. The apparatus was designed by Dr. Sigfrid Specht, chief engineer, Ferrous Magnetic Corp., New York, and was installed by the Magnetic Analysis Corp., Long Island City, N. Y.

Foreign Steel Is Used

The use of magnetic testing to promote continuous and rapid production of razor blades may be understood from a brief description of the manufacturing processes. Nearly all of the strip used for safety razor blades is steel made from Swedish ore. The difficulties, which the American steel producer has to face when competing with this steel, include the supply of pure base ore, the fact that the ore reduction in Sweden is with charcoal containing little sulphur and the low cost of labor.

The Autostrop Safety Razor Co. uses a Swedish annealed strip with the approximate analysis of carbon 1.25, chromium 0.25 and sulphur and phosphorus combined less than 0.04 per cent. This steel is cold rolled, comes in large coils ready for perforating, testing, heat treating and finishing into blades. The magnetic testing equipment is used for investigating the structure and determining the carbon content. Two tests of each strip are made, one before and the other after hardening. The first test determines which of three standardized hardening sequences is to be used. Each coil also is tested for Rockwell hardness and is given a tag containing a factory number which persists throughout the entire manufacturing process. A complete chemical testing laboratory is part of the plant equipment and occasional samples are chemically tested although this merely is used as a check and not as a production operation.

The manufacture of razor blades at the Autostrop Safety Razor Co.'s plant is by the continuous method, that is, the individual blades remain in the strip through nearly all of the operations. The strip travels continuously through the testing, punching, heat treating and grinding operations. The perforating is done on high-speed automatic machines which punch hundreds of blades a minute. An automatic hardening process follows. The furnaces for this treatment are heated with gas with electric valve controls. A special nonoxidizing atmosphere is maintained in the furnaces and governing pyrometers are located at various points.

The polishing operation, which succeeds the heat treatment, is also automatic. The strip is fed and guided automatically and the polishing wheels operate on both surfaces of the steel. The wheels are elastic coated with No. 300 aloxite. After polishing, a cleaning machine prepares the strip for etching which is

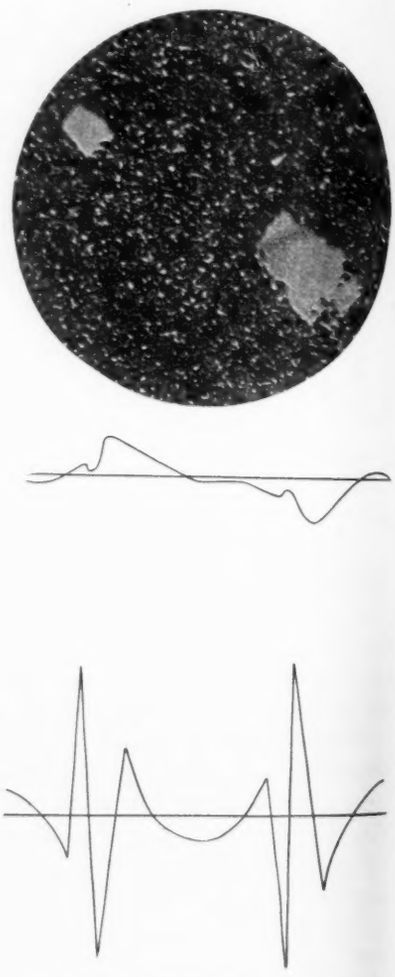


Fig. 3—Photomicrograph of steel containing carbide segregations (X600) which produce harmonics in the oscillogram as shown in the top curve. An amplication of the top curve is shown below

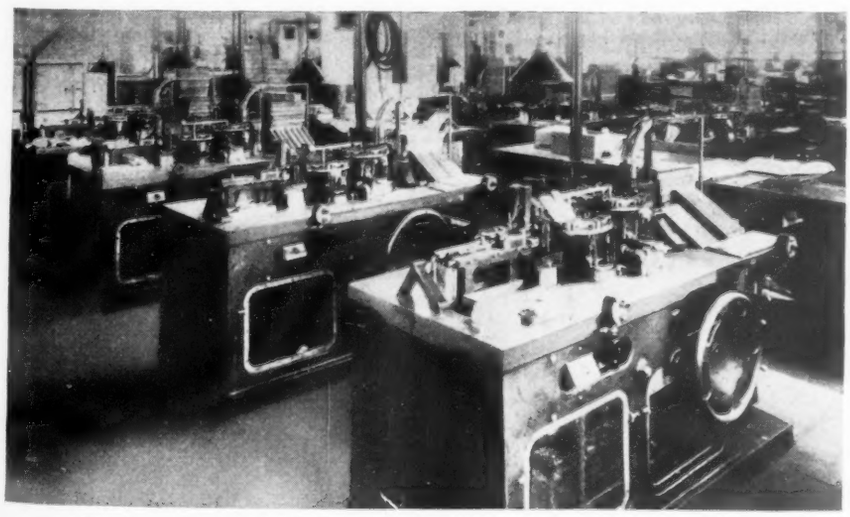
done with a special automatic etching machine.

The actual sharpening of the blades is accomplished with multiple sets of grinding and honing wheels. The honing heads are of a special design to give a true mathematical edge. They consist of a series of opposed wheels solidly mounted and carefully trued. The strips of blades to be honed are carried forward with the edges held accurately at the point of honing on the wheels. For this operation fine alundum grit is used with an oil lubricant. No further finishing is required.

Blades Cut from Strip

One of the most ingenious machines used is the automatic cutting-off tool which cuts hundreds of the individual blades from the strip per minute and places them in magazines without injuring the delicate sharpened edges. Each magazine contains 1000 blades and is so designed as to protect the sharp edges during handling. The magazine also leaves the ends of the blade exposed so that they may be properly handled.

The blades, still held in the magazines, are inspected by reflecting the bright light from a mercury-vapor lamp on the blade edges. Experience has shown that even slight imperfections show up immediately under this inspection. The imperfect blades are removed and the balance go to the various departments for wrapping, boxing and shipping. The automatic wrapping machines take the blades from the magazines and wrap them with oiled paper leaving a small space between the sharp edge of the blade and the fold in the paper and then place this in an outside sealed envelope. After the blades thus are wrapped they are placed in a machine which automatically counts them and places them in packages of five or ten. Each carton finally is wrapped automatically and sealed in cellophane.



Battery of machines employed for wrapping safety razor blades

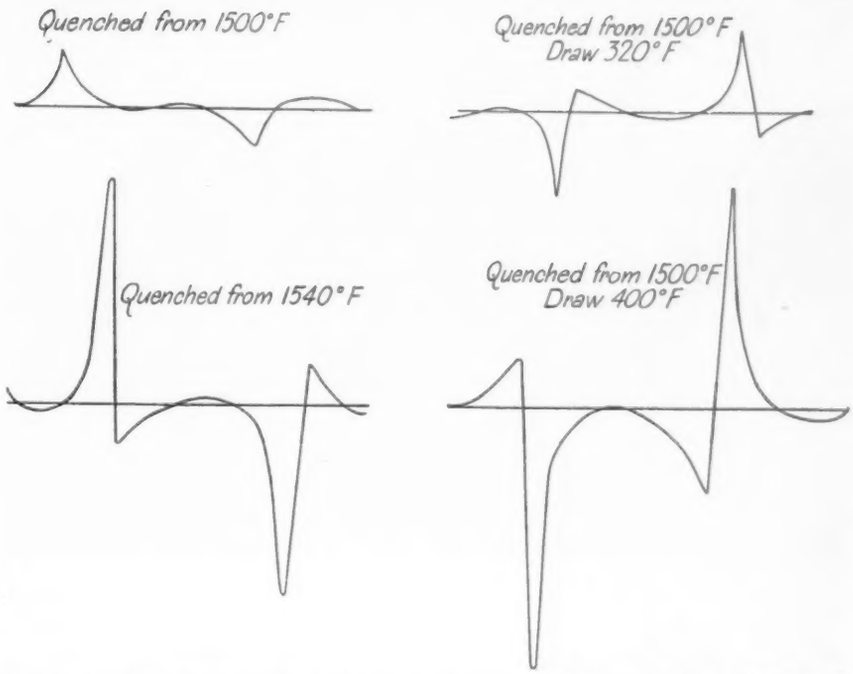


Fig. 4—Oscillographs showing the effect of heat treatment. Such graphs permit the operator to detect true hardness as a function of the steel's actual physical state

Reinforcing Steel Institute Hears Market Data

All sections of the United States were represented at the semiannual meeting of the Concrete Reinforcing Steel institute, held Oct. 20-24 at Briarcliff Lodge, Briarcliff Manor, N. Y. The opening day's session was featured by the presidential address, presented by Louis C. Meyer and published in part in the Oct. 23 issue of STEEL. The regular semiannual meeting of the board of directors also was held.

Progress made in promoting intermediate grade steel was discussed by A. E. Lindau, president, American System of Reinforcing, Chicago. Improvements in residence construction in Oklahoma City, Okla., were outlined by N. R. Patterson, president, Patterson Steel Co., Tulsa, Okla. Subsequently the report of the forms department of the institute was presented by Louis Aronstam, chairman of the governing committee.

The general subject of customer relations came up for discussion during the final day of the program in an executive session. A paper was heard relating to direct mill shipments of material, the author being Walter M. Bachtell, manager of warehouses, Truscon Steel Co., Youngstown, O. R. W. Johnson, institute engineer, explained problems to be faced in securing adoption of the new standard weights recommended by the institute. Two speakers discussed group developments in various sections of the country and to conclude the technical program Arthur Fisher, secretary, executive committee of the Trade Practice conference, enumerated certain trade practice violations and commented upon their effect on the industry.

Plan Oil Burner Show

Preliminary plans for the eighth annual convention and oil burner show at Philadelphia, April 13 to 18, are being announced by the American Oil Burner association, 342 Madison avenue, New York. Convention headquarters will be in the Benjamin Franklin hotel and all meetings will be held there. The annual oil burner show will be held across the street on the exhibit floor of the Gimbel building.

One of the first steel frame houses built in Pittsburgh in 1928

PART III, the concluding article in this series on steel frame house construction, draws some general conclusions as to the market possibilities of the future. A reclassification of ideas of architecture and construction will accompany the broadening use of steel for residences. The first two installments appear in STEEL, Oct. 16 and 23 and dealt more specifically with the methods being used for merchandising steel frame houses.

Steel Residences— Is This Market Appreciated?

BY R. T. MASON
Associate Editor, STEEL

Part III

THE future market possibilities for steel framing for residences depends on more factors than the mere building of a receptive public consciousness to the qualities of steel.

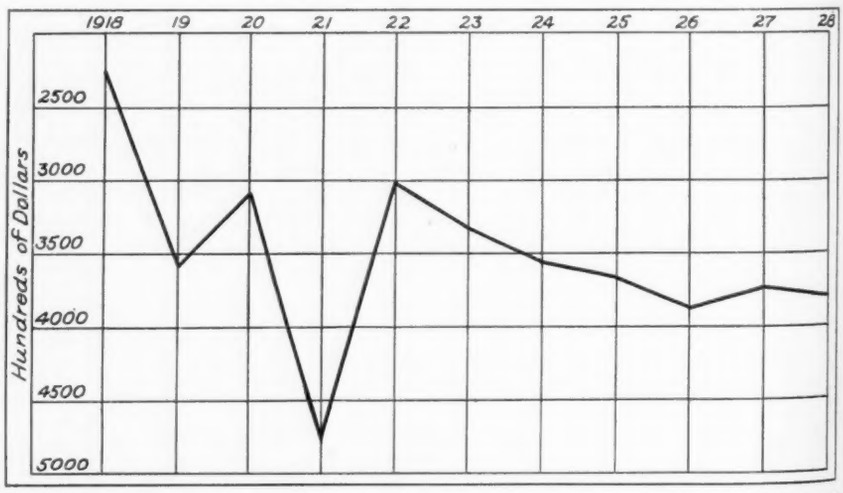
For example, architecture finally is being re-vamped to more completely express the modern requirements and materials. Although there will continue to be reproductions of the architecture of the Greek, English, Spanish and French, etc., both ancient and modern, with the more recent Colonial and Southern types for residential structures, the future holds unlimited potentialities in new creations.

Just as the introduction of steel as a material for building erection was effective first in the field of commercial structures, so the trend toward a new school in architecture also is being felt there first. Evidences of progress are world-wide. Germany has made rapid strides in adapting its architectural plans to the use not only of structural steel, but other steel products. All-steel churches, homes and apartments are growing more numerous in that country.

In the United States, this new architecture still is regarded as unique. The Travel and Transport building being erected now in Chicago for the next World's Fair is a good expression of the modern trend. This structure is being erected entirely of steel without windows. Ventilation and lighting are controlled mechanically, offering possibilities of more perfect internal conditions. The General Electric Co. soon will start construction of a building at its Pittsfield, Mass. plant, in which the accepted materials of brick and timber will be eliminated, glass and steel alone being used for its construction. Another of these unusual buildings, erected by the Worcester Pressed Steel Co., Worcester, Mass., using only glass and steel, has proved very successful.

Considerable additional effort must be expended before American house builders will be ready to accept such an altered method of construction as this. But, even though the ultimate departure from present accepted standards may not be so radical, the part that structural steel will play in changing the architecture of the United States will be paramount.

When the average builder realizes that houses can be constructed with steel frame at a comparable or even less cost than with less substantial and permanent materials—the demand will accelerate rapidly. Complete coverage of the market should



Hundreds of dollars expended in building construction per ton of fabricated steel produced are shown on the above chart

place structural steel framing on the same basis as other materials. In other words, removal of structural steel from the technically skilled labor class, to the unskilled class. Some fabricators even now are stressing the fact that anyone capable of following a plan, using a level and a wrench can put together a steel frame for house, garage, barn, etc.

This is an important sales argument for use in agricultural districts where farmers have done much of their own building. The sale of structural steel framing should reach the place where a purchaser may go to building material yard or to a hardware or general store and obtain his angles, channels, joints and beams with which to carry out his construction plans.

Benefits Affect Whole Industry

The resultant benefits will be widespread, affecting most phases of the steel industry. Following in the footsteps of the fireproof, permanent home markets created by structural steel promotion will be steel window sash, steel trim, steel doors, metal lath, steel partitions for basements, steel cupboard and shelving, steel kitchen and laundry equipment, steel furniture for all rooms, etc. The opportunities for expanding the application of steel to the residence lie with the architect and designer. Homes that are durable, economical, fireproof and beautiful should be the source of much business to the average manufacturer as well as the structural shape fabricator.

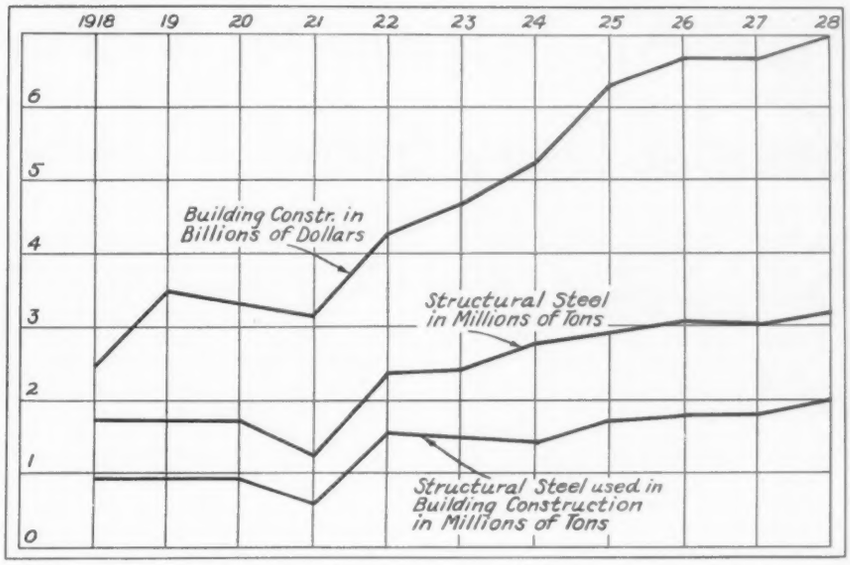
Whether the steel industry as expresed by mills, fabricators and distributors will meet the challenge which progress presents depends upon co-ordinated merchandising efforts of the industry as a whole. The burden of obtaining public acceptance of modern architecture and modern materials should not be entrusted to any one individual unit or any one company, no matter how progressive. The task calls for united effort to achieve the results which the merits of structural steel deserve.

* * *

In presenting this series of articles on the steel frame house, no attempt has been made to explain the details of construction. Each type of steel framing differs but the individual fabricators have worked out in complete detail the problems presented in using their methods of construction The Steel Frame House Co., for instance, has published its "Architects and Builders Manual" which shows specifically the manner of assembling the different parts. Before any concentrated effort rightly can be placed upon the merchandising of steel frame houses, construction details must be perfected.

(Much of the data for these articles has been obtained from the Steel Frame House Co.)

—THE END—



Relation of structural and fabricated steel in building construction for ten year period of 1918-1928. *It is estimated that approximately* 55 *per cent of the total structural tonnage shown is used in building construction*

Dries Converter Bottoms in Kiln-Type Furnace

A continuous furnace constructed and operated on the principle of a tunnel kiln for drying bessemer converter bottoms recently was installed at the National works, National Tube Co., McKeesport, Pa. The unit is 150 feet long and has a capacity of eleven 25-ton bottoms per 48 hours. The first pack heating furnace to be designed and constructed for the specific use with 1818 alloy steel sheets has been installed at the Park works, Crucible Steel Co. of America, Pittsburg. Steel will be heated to 2000 degrees Fahr. Three continuous slab heating furnaces, the first to employ triple firing and zone control for heating wide slabs, recently were placed in operation at the plate mill of the Republic Steel Corp., Youngstown, O. All foregoing furnaces were designed and constructed by the Rust Engineering Co., Pittsburgh.

Soft Coal Output Down

Total production of soft coal during the week ended Oct. 18 is estimated at 9,232,000 net tons, compared with revised output for the prior week of 9,495,000 tons. The decrease was 263,000 tons, or 2.8 per cent.

Potential Market for Structural Steel for Residential Construction

In 37 Eastern States Representing About 88 Per Cent of total Country

Year	Dwellings Under $10,000		Dwellings $10,000 to $19,999		Dwellings $20,000 to $49,999		Dwellings $50,000 and Up		Totals	
	No. of Dwellings	Potential Steel Tonnage	No. of Dwellings	Potential Steel Tonnage	No. of Dwellings	Potential Steel Tonnage	No. of Dwellings	Potential Steel Tonnage	No. of Dwellings	Potential Steel Tonnage
1924*	107,297	858,376	22,765	341,475	3,796	75,920	430	21,500	134,288	1,297,271
1925	141,647	1,133,176	28,824	432,360	5,132	102,640	638	31,900	176,241	1,700,076
1926	127,768	1,022,144	25,606	384,100	5,107	102,140	666	33,300	159,147	1,541,684
1927	132,803	1,062,424	27,293	409,395	5,115	102,320	765	38,250	165,976	1,612,387
1928	148,625	1,189,000	29,881	448,215	6,048	120,960	893	44,650	185,447	1,802,825
1929 (Seven months)	75,923	607,384	14,616	219,240	3,723	74,460	495	24,750	94,757	925,834

Average number of dwellings for the past six years—164,250
Average potential steel tonnage—1,590,850**
*Included only 36 states.
**This figure representing 88 per cent of the total market indicates a total potential market of 1,807,800 tons annually.
Data furnished by Steel Frame House Co.

New Applications for Metals Seen at Dairy Show

STEEL, of the newer corrosion-resisting types, was much in evidence at the fifth annual Dairy Industries exposition held in Cleveland public hall, Oct. 20-25. The trend toward the application of polished chrome-nickel steel in the form of sheets, bars, tubing and castings was exemplified by pasteurizers, ripeners, coolers, washers, etc.

Appearing in Cleveland for the third time in the past four years, the show taxed the capacity of exhibition space, 200,000 square feet being occupied. Machinery to the extent of over $1,000,000 was displayed by some 285 exhibitors and 11,926 visitors, representing the dairy and dairy machinery industries attended.

Machinery sales during the show were placed between $1,000,000 and $2,000,000, estimated to be 10 per cent of the anticipated business for 1930-31.

Polished Sheets on Display

Sponsoring displays of corrosion-resisting chrome-nickel steels were the Allegheny Steel Corp., Brackenridge, Pa., and Republic Steel Corp., Youngstown, O. The former showed applications of polished Allegheny metal to such articles as milk cans, coils for pasteurizers, and other milk handling equipment. A chrome-nickel steel ingot was cut in half and the section polished bright, being set up for display to reveal the sound structure and the mirror-like finish obtainable. Samples of chrome-nickel steel wire, 0.015-inch in diameter, were shown as well as a number of sizes of thin walled seamless drawn tubing, polished inside and out, and castings of the chrome-nickel type.

A feature of the exhibit arranged by Republic Steel Corp. was a 60 by 173-inch polished sheet of Enduro Nirosta KA2 metal, said to be the largest corrosion-resisting steel sheet ever polished. Other examples of uses of this material, notably in the dairy industry, were displayed prominently.

International Nickel Co., N. Y., exhibited samples of nickel and monel metal in use for various parts of dairy machinery. This company's booth is shown in an accompanying illustration. Examples of glass lined steel containers were shown at the booth of the Pfaudler Co., Rochester, N. Y., and steel containers coated with a special vitreous enamel material of white, blue or green color were displayed by the Glascote Co., Euclid, O.

Bristol Co., Waterbury, Conn., and Taylor Instrument Cos., Rochester, N. Y., displayed control instruments for dairy use. A small motor and control were operated at the booth of General Electric Co., Schenectady, N. Y. Alloy Products Corp., Milwaukee, demonstrated pasteurizers, coolers and other units in which substantial amounts of chrome-nickel steel were used. Waukesha Specialty Co., Waukesha, Wis., showed a variety of cast fittings and parts made of a special nickel alloy developed by that company.

Bradstreet's review says: "An increase in, rather than a decrease of, contrary trade currents is visible in the week's news."

Welding To Be Discussed by Acetylene Association

Oxyacetylene welding and cutting will occupy the major portion of the program for the thiry-first annual meeting of the International Acetylene association, at Congress hotel, Chicago, Nov. 12-14. Special sessions also have been arranged on the metal working industry, building construction, building piping, etc.,

Papers to be presented are as follows:

"Production Welding by the Oxyacetylene Process," by C. E. Booth, Noblitt-Sparks Industries Inc., Indianapolis.

"Production Welding by the Oxyacetylene Process," by L. R. Gurley, editor, *Welding*, Pittsburgh.

"Oxyacetylene committee report," by E. A. Doyle, Linde Air Products Co., New York.

"Experiments on Gas Welded Structural Joints," by Prof. J. R. Griffith, Oregon State Agricultural college, Corvallis, Oreg.

"Possibilities of Welding in Private Homes," by E. H. Ewertz, consulting welding engineer, New York.

"Securing Acceptance of Structural Welding by Architects, Structural and City Engineers," by F. Eder, R. W. Hunt Co., New York.

"Welding Piping Systems in Montgomery, Ward & Co. Building in Chicago," by W. H. McCaully, architect, Chicago.

"Welding as Applied to Sprinkler Systems," by F. B. Quackenbos, assistant chief engineer, Western Factory Insurance association.

"Tube Turns," by R. E. Fritsch, vice president, Tube-Turns Inc., Louisville, Ky.

"Welding and Cutting on Railroads," by G. W. Leiber, M. K. T. stores department, Parsons, Kans.

"Truck Transportation," by W. N. Dunlap, Aluminum Co. of America, New Kensington, Pa.

"Oxyacetylene Welding in Local Gas Transmission and Distribution," by L. A. Kirtsch, Midland United Co.

Better than $1,000,000 worth of dairy machinery was on display at the fifth annual Dairy Industries exposition in Cleveland, Oct. 20-25. Sales during the week were heavy

Left to right, the booths of Allegheny Steel Co., International Nickel Co. and Republic Steel Corp., typifying trends toward increasing use of metals in dairy machinery

High-Chromium Alloy Steels; Their Present Status

BY E. C. BAIN
United States Steel Corp.

Part I

THE aim of this article is to sketch briefly the structure and metallographic nature of the now familiar types of corrosion-resistant iron alloys, which, however they are designated, depend largely upon the presence of a high chromium content for their amazingly valuable properties. Its justification lies in the circumstance that there has been published, so far as is known, no brief compilation of the structural nature of all of these types in one place. Many variations of the more expensive high-alloy metals are not discussed here, but it was deemed advisable to limit the discussion to the cheaper materials. Information has been drawn from many sources but no specific references to previously published papers or personal communications have been given. A number of the illustrations are from a paper by Dr. R. H. Aborn and the author, presented before the American Society for Steel Treating at the National Metal congress in Chicago. The writer wishes to express his respect for the many workers, especially the pioneers who have sought and found the first important information needed for the development of these valuable alloys which differ so markedly from the typical steel.

Variety of Names Used

Alloys of this family have been designated by a variety of names and trade names; in this discussion the general term stainless, or rustless, steels and irons will be used to cover the entire class merely to avoid controversy as to nomenclature.

The element chromium possesses an almost unique property of protecting itself against atmospheric corrosion in spite of a strong tendency, at the same time, to combine with oxygen. Indeed, it is believed that a fresh surface of chromium metal becomes oxidized almost instantly, but that this invisible film of oxygen or oxide is itself of such a nature as to be continuous, impervious, and extremely stable. The corrosive action which starts with great avidity is thus abruptly stopped in the very moment it begins. This property of chromium is probably possessed also to some extent by aluminum and silicon; it may even be a vastly more intense manifestation of the temporary passivity acquired by iron and nickel in the presence of strong oxidizing agents such as nitric acid.

In any event, this remarkable property of chromium is conferred also upon its solid solutions in iron when a fair amount, roughly 12 per cent, is present. This is a fortunate circumstance since moderately pure chromium is expensive and except as prepared by elaborate laboratory methods is not even slightly ductile or malleable. Its solid solutions in iron, however, are workable up to at least 50 per cent chromium and the ordinary compositions up to 20 or 25 per cent chromium can be fabricated by almost any of the ordinary methods. The marked resistance to atmospheric attack seems to be developed rapidly as the chromium content increases beyond about 10 or 11 per cent in low carbon alloys. It has been suggested that the resistance to moist atmosphere is only fully developed when at least one atom in a total of eight is a chromium atom. Such abrupt changes in surface chemical properties have been observed in other alloys at a similar simple atomic ratio. If this hypothesis be correct it would indicate that the proper sort of adsorbed oxygen film can only be produced when there is presented at the surface one atom of chromium, on the average, to three of iron. This consideration is largely speculative at the present time, but a better knowledge of this surface effect might conceivably point the way toward the further development of even better or cheaper corrosion-resisting alloys.

At the present time there seems to be no promise of any other element being able to qualify as a substitute for chromium as an alloying element in iron or steel for inhibiting atmospheric corrosion. Addition of the more noble elements, which in themselves are not much attacked, does not result in improving iron and steel greatly, although copper and probably nickel in small proportions quite clearly retard atmospheric corrosion. In general neither the physical properties nor the chemical nature is satisfactory. The other elements which might be expected to act somewhat similarly to chromium (silicon and aluminum) do not form plastic solid solutions when added in amounts great enough to secure surface protection. As auxiliary alloying elements they appear to contribute distinct advantages especially in iron-chromium alloys intended to resist high-temperature oxidation. The metallurgy of the rust-resisting steels and irons is, then, essentially the metallurgy of the chromium alloys.

Chromium as Carbide

In the foregoing introduction the chromium has been assumed to exist in solid solution with iron. This it may do in any concentration but only in the absence of appreciable carbon will it be found *wholly* in solid solution under all conditions. In the presence of more than a few hundredths of one per cent of carbon, the annealed high-chromium alloys, with or without nickel, manganese or silicon, may always contain a carbide which is rich in chromium. In the case of the low-chromium steels of the automotive or structural type, the carbide which forms is principally the ordinary cementite of carbon steels, but in the rustless type of steels the carbide is genereally thought to be the compound Cr_4C with some small amount of iron replacing some of the chromium. It appears that a unit weight of carbon present in these alloys, as annealed, enters into combination with about 16 weight units of the chromium to form the carbide.

THIS is the first instalment of three, outlining briefly the structures and metallographic nature of the much discussed corrosion-resisting alloy steels and irons. Stable phases observed in the high-chromium low-carbon alloys are presented in the accompaning article, as well as an insight into action of chromium in producing corrosion resistance. The two remaining instalments will be published in early issues of STEEL. The author, E. C. Bain, metallurgist, research laboratory, United States Steel Corp., Kearny, N. J., presented the material in the form of a paper at the fall meeting of the American Iron and Steel institute in New York, Oct. 24.

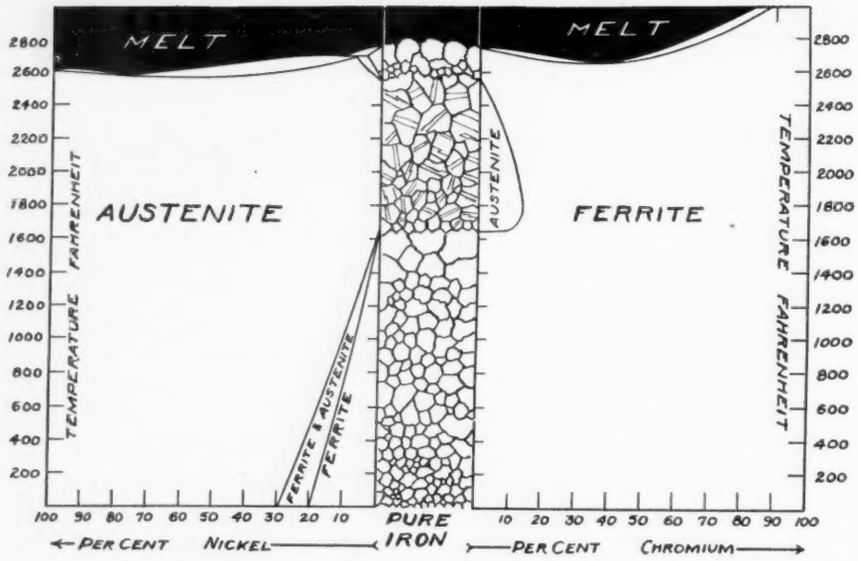


Fig. 1—Constitution diagrams of iron-chromium and iron-nickel systems. The opposing influence of these two elements upon the structure of the iron alloys may be noted

Inasmuch as the carbide exists as small particles dispersed in the solid solution, it readily will be seen that the solid solution will be depleted of its chromium quite rapidly when large amounts of carbide form. The analysis of the metal as a whole will show higher chromium than the solid solution and much less chromium than is contained in the carbide particles. But the corrosion properties of the alloy are only those of the solid solution, obviously, and therefore in a sense the carbide represents a wasted proportion of chromium. It has been suggested that the ferritic rustless irons which are used in the annealed condition should have a chromium content of about 15 per cent plus 16 times the per cent carbon content in order to be safely rust-resistant.

The utilization of the maximum amount of the chromium content for corrosion resistance involves the preservation of it in the solid solution. This is usually accompished in two principal ways:

1—In the case of annealed straight chromium alloys, by holding the carbon content low.

2—By dissolving the carbide at high temperature and retaining it in supersaturated solid solution by rapid cooling. In the case of the straight chromium cutlery type of steels, the product is the martensite of hardened steel; with nickel present in sufficient amount, the product is austenite persistent at ordinary temperature. In either case the whole of the chromium becomes effective since it is in solid solution.

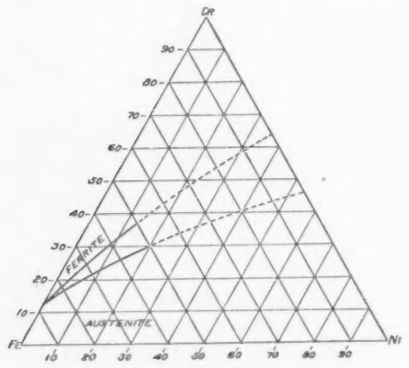


Fig. 2— Composition limits of the austenitic and ferritic alloys at temperature of maximum austenite formation. The intermediate field represents the alloys of mixed composition

The details of the carbide behavior form a considerable portion of the following summarized account of the metallographic structures of the rustless steels.

Three Stable Phases Found

In the various high-chromium steels with and without nickel or manganese and of negligible carbon content only three stable phases have been found. One of these occurs in two different states so that in all, four names have been applied to cover the constituents found in all the systems. They are as follows:

1—*Austenite.* The solid solutions are in the gamma form of iron, nonmagnetic, ductile, and recognizable in the microscope by characteristic twin bands whenever preserved. The crystallinity of gamma iron and austenite is like that of nickel, copper, etc., and is known as "face-centered cubic" to the crystallographer.

2—*Carbide.* In the presence of high chromium, carbon combines with it to form a compound Cr_3C with probably some iron substituting for some of the chromium. This carbide, except for an apparent greater stability, is not unlike the iron carbide Fe_3C, particularly in microscopic appearance.

3 A—*Ferrite.* The solid solutions are in the alpha or delta form of iron, magnetic, and always free from the characteristic twin bands found in many other metals. Alpha iron and ferrite possess the arrangement of atoms which is designated as the "body-centered cubic" type of crystallinity.

3 B—*Martensite.* When, as is often the case, austenite transforms to ferrite at comparatively low temperature, carbide is not precipitated and the resulting metal is hard and retains magnetism permanently. Under the microscope the etched metal shows a characteristic "acicular" structure. The name martensite is here applied to such material, even though the actual hardness, due to its low carbon content, is not great.

In the absence of carbon, only the two constituents ferrite and austenite are ever found in the iron-chromium, iron-nickel, or iron-chromium-nickel alloys. That the entire system should consist of such a limited number of phases comes about through the circumstance that chromium and alpha iron or delta iron are mutually soluble and isomorphous while gamma iron and nickel likewise form solid solutions in all proportions. Pure iron exists in the gamma form only between about 1650 degrees Fahr. and 2560 degrees Fahr., but the addition of nickel rapidly widens this limiting temperature range so that with some 25 per cent nickel in solution the alloy is austenitic at all temperatures. On the other hand, the addition of chromium to pure iron rapidly narrows this temperature range until with some 13 per cent chromium present the alloy is wholly ferritic at all temperatures. Nickel and chromium each serve to eliminate the allo-tropic transformations, but the former stabilizes the nonmagnetic form of iron while the latter stabilizes the low-temperature magnetic form. The chart of Fig. 1

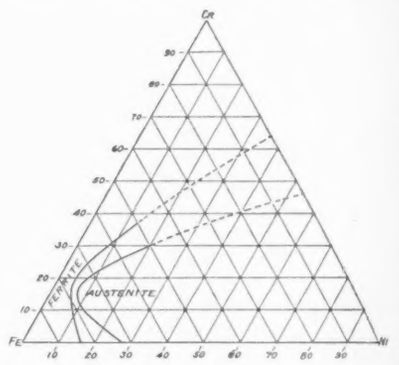


Fig. 3—Composition limits of the austenitic and ferritic alloys as quenched from the temperature range of Fig. 2

shows the constitution of the carbon-free iron-nickel and iron-chromium alloys arranged to contrast the trends. A conventional representation of the microscopic structure of pure iron is shown between the two constitution diagrams.

In Fig. 2 is shown the composition of the iron-chromium-nickel alloys which may, by heating to the optimum temperature, be rendered austenitic. The field of the alloys wholly ferritic at this temperature range is also shown. The field lying between the wholly ferritic and wholly austenitic compositions corresponds to mixtures of ferrite and austenite. The chart of Fig. 3 shows the composition limits of the same phases present after quenching from the temperature range of Fig. 2. Just as iron itself is ferritic at high and at low temperatures, so are the iron-rich nickel-chromium alloys inclined to be ferritic at both high and low temperatures and austenitic at intermediate temperatures. The chart of Fig. 4 shows the wide extent of ferrite over a range of compositions just below the melting

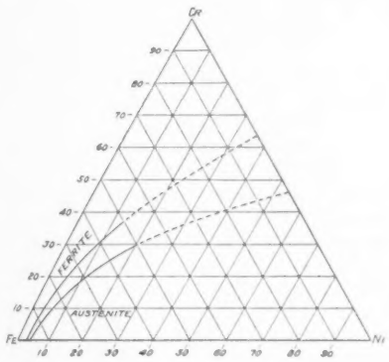


Fig. 4—Composition limits of the austenitic and ferritic alloys near their melting points

point of the system of alloys and the still greater prevalence of ferrite in the alloys, if brought to equilibrium at room temperature, is illustrated in Fig. 5. The approximate binary constitution diagrams of iron-nickel, iron-chromium and chromium-nickel are attached to this diagram of Fig. 5.

The foregoing description of the carbon-free alloys is of more scientific than practical interest and it is offered only because it affords a somewhat helpful background for the study of the commercial alloys which of necessity carry some appreciable amount of carbon. The action of carbon to change the structure of the rust-resisting steels exerts a strong influence upon their properties; and the carbon effect on the whole is a major consideration in learning to handle them properly. The influence of carbon content is best described for each type separately.

(To Be Continued)

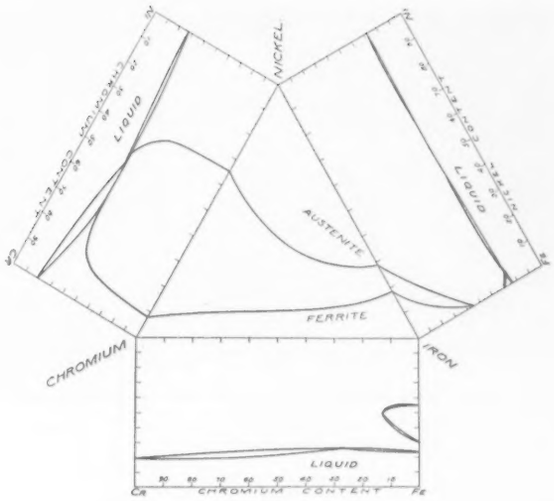


FIG. 5—Probable composition limits of the austenitic and ferritic alloys as in equilibrium at low temperature. The three constitution diagrams of the binaries are shown attached

Foundrymen Select Chicago for 1931 Convention and Exhibition

THE 1931 convention and exhibition of the American Foundrymen's association will be held in the Stevens hotel, Chicago, the week of May 4, 1931, according to a recent announcement of the association. This information follows the unanimous vote of a special committee appointed to consider the question, in a meeting held at Hotel Statler, Buffalo, Oct. 17.

The committee was unaminous in its opinion that, all things considered, the accommodations available at the Stevens hotel were superior for this meeting to those offered by other cities whose invitations were presented. The proposal of the Stevens hotel includes a 50 per cent increase in exhibit space over that used for A. F. A. convention in 1929, and two additional meetings rooms in the hotel tower, seating 200 and 300 persons, respectively.

To Hold Limited Exhibit

As announced at the meeting by Chairman N. K. B. Patch, Lumen Bearing Co., Buffalo, and president of foundrymen's association, a limited exhibit of foundry equipment and supplies is scheduled for the 1931 meeting following the policy established in 1929.

Coupled with the decision of the special committee to meet in Chicago next year was the recommendation that the 1932 annual meeting be held in Philadelphia and that an option be obtained on the new Philadelphia convention hall, now under construction, for a convention and large exhibit the first full week in May, 1932. It was further recommended by the committee that, in the future, all annual meetings of the American Foundrymen's association be scheduled for the first full week in May.

Chemical Medal to du Pont

Pierre S. du Pont, chairman, E. I. du Pont de Nemours & Co., Wilmington, Del., has been selected by the chemical industry to receive the first award of the *Chemical Markets* medal, in recognition of distinguished economic services rendered in the cause of industrial chemistry in the United States.

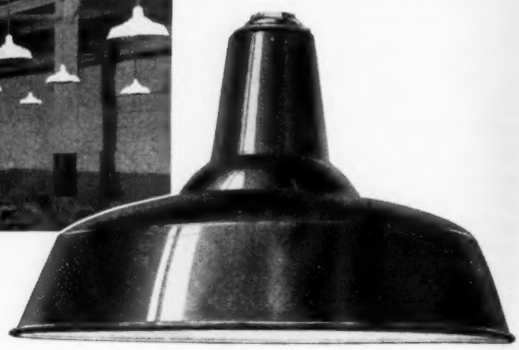
The conspicuous lack of any appropriate award on the part of the chemical industry for its leading industrialist as contrasted with the large number of honors bestowed upon its technicians, engineers and chemists, prompted *Chemical Markets* to celebrate the fifteenth anniversary of the founding of the paper and the tenth of the ownership of William Haynes by instituting the award of the medal.

Nominated with Mr. du Pont were E. F. Allen, president, Mathieson Alkali Works Inc., 250 Park avenue, New York City; L. H. Baekeland, chairman and president, Bakelite Corp., 249 Park avenue, New York City; the late Herbert H. Dow, president, Dow Chemical Co., Midland, Mich., and George Eastman, chairman, Eastman Kodak Co., Rochester, N. Y.

Exports of iron from Tunisa in 1929 went chiefly to Netherlands, which took 361,013 tons out of 974,416 tons exported, according to the department of commerce.

Sizes and shapes of steel reflectors have been standardized

177th Article
◆
Industrial Lighting Reflectors



Large Uses of Steel in Small Ways

FOUR thousand to five thousand tons of steel is consumed annually in the manufacture of industrial lighting reflectors. The number of units produced in 1929 was 2,264,000, and while the 1930 production probably will not equal that figure the business is growing as the value of reflectors becomes better understood and appreciated.

At present there are six manufacturers who make practically all of the reflectors. Steel is the principal material used, but some units are made of nonferrous metals owing to the ease with which they can be plated with chromium. The manufacturers using steel coat the inside of the reflectors with white enamel, constantly striving to improve the light-reflecting value and stainless surface of the coating.

Experiment with New Steels

Since the introduction of corrosion-resisting steels possessing a bright, silver-like surface, experiments have been made with such materials, and a number of important installations have been made. Manufacturers using ordinary steel refer to the added cost of the stainless material and are inclined to doubt whether it will come into general use in industrial plants where there is a large amount of smoke and grime, though admitting its value where ornamentation as well as lighting efficiency is a desirable feature. So far as known the experiment has not been tried of uniting a thin sheet of the lustrous steel, for the reflecting surface, with a heavier sheet of ordinary steel, for rigidity.

When the gas-filled lamp was perfected it became necessary for the manufacturers of reflectors to alter the shape of the units to accomodate the long neck of the lamp, that the lamp would not project below the rim of the reflector. So many sizes and shapes of reflectors were appearing the makers decided to standardize, and out of this decision came the so-called RLM (reflector and lamp manufacturers) dome. The bulk of the sales now are of this type, shown in the illustration at the right. The majority of other types fall into three classifications, shallow dome, deep bowl, and angular.

Reflector Sizes Vary

The diameters of the RLM domes vary from 12 inches up to 20 inches, while the depth is about 7 inches. Where formerly the majority of these reflectors were equipped with 150-watt lamps, now most of them have 200-watt lamps, and the tendency is to increase the size of the lamp to 300 watts, using fewer units for illuminating large areas. This is made possible by the increased efficiency of the lamp and the improved reflecting surface of the reflector.

The gage of the steel varies with the size of the reflectors. In making the RLM domes some manufacturers use as many as 14 stamping operations, including the blanking of the sheet. The material is annealed at frequent intervals to permit of deep drawing. Others do not draw the entire reflector from one sheet, but make the elongated neck separately and weld it to the dome. All reflectors have castings inserted in the neck threaded to receive a pipe for the wires, and for attachment of the electric lamp socket. The domes of some reflectors are corrugated, the corrugations strengthening the shell and enhancing the reflecting value of the unit.

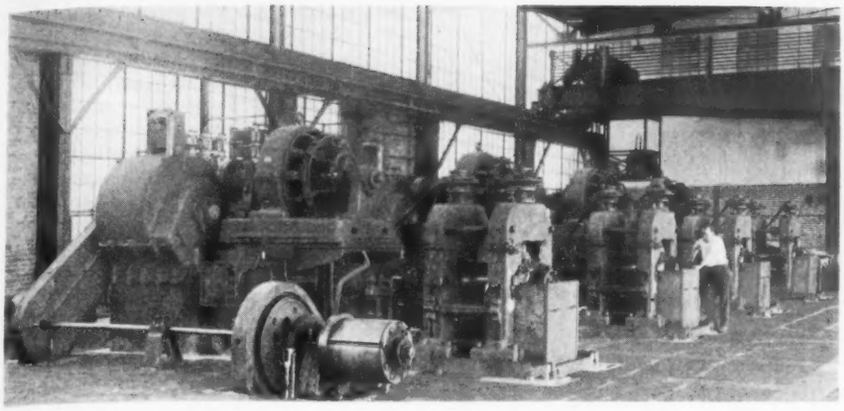
Coating the shells with enamel is one of the most important features of manufacture, as the lustrous white reflecting surface must conform to rigid specifications, and be subject to constant inspection by electrical testing laboratories. The entire dome is given a ground coat, a green coat outside, and two white coats inside. Specially prepared glass is shattered into minute particles called "frit" and this material is placed in porcelain lined steel cylinders, partly filled with large quartz pebbles. With the addition of water and coloring pigments the frit is macerated and churned into an impalable fineness as the cylinders are tumbled end over end, until a fluid of velvety smoothness is obtained from the mixture.

The steel shells are sprayed with the enamel. During the firing the shapes are heated to a dazzling whitness, almost to the softening point. The pores of the steel open, the enamel runs into them and makes so close a contact that microscopic examination shows the enamel fused into, under and around the minute bent, claw-like projections on the surface of the steel.

Special enamels have been developed for domes used where there are strongly corrosive fumes, and vapor-proof electric lamp covers are employed where breakage of lamps might result in the ignition of gases.

Rail Steel Bar Group Meets

The Rail Steel Bar association held its fortieth general assembly at the Commodore hotel, New York, Oct. 24. Discussion covered the production of concrete reinforcing bars, light rails, bed shapes, etc. The association discussed a contemplated program of production research and the establishment of metallurgical and laboratory facilities. H. P. Bigler, Builders building, Chicago, is secretary of the association.



Typical 4-stand tandem mill with the reel driven from the last stand

Cold Rolling of Strip Steel Undergoes Development

BY STEPHEN BADLAM

Consulting Engineer, Pittsburgh

COLD rolling may be defined as, the working, or shaping, of a material by rolls, at temperatures below the critical range. In practice, however, at least as far as steel is concerned, it is confined to the working at approximately atmospheric temperatures, any increase over this being incidental, rather than intentional. The ordinary temperature range for the cold rolling of steel runs from 50 to 250 degrees Fahr. Hot rolling of steel is the working above the critical range. The ordinary range for hot rolling runs from about 1300 to 2300 degrees Fahr., although in some cases, *e. g.*, sheets, the working range may extend to a point considerably below this, 900 to 1000 degrees Fahr.

It may be assumed that the gage accuracy of cold rolled material may be made greater than that of hot rolled, and therefore, a market for cold rolled always will exist upon that account. As against this, however, the accuracy of rolling steel hot will continue to improve as time goes on and therefore the price differential obtainable for cold rolled, on account of gage accuracy, will tend to diminish, or the use of cold rolled steel will become more circumscribed.

Rolling Procedure Varies

The cold rolling process, as a whole, consists of a number of steps in addition to the rolling operation proper; but each different class of material, each different finish and temper, and different edges, will call for variations in the process. In many cases the sequence of operations may be changed, or while the sequence may be the same, the operations are varied from the standard in line with the past experience on the article to be produced, or similar articles, with the result that the variations in practice are almost unlimited.

Rolling for temper contemplates a less radical reduction and generally is effected on single mills, or if the temper is hard or half hard, sometimes in pairs, tandem. Two-high mills generally are used for widths under 24 inches and mills of the backing roll type for the wider widths.

The edge rolling of strip generally is performed by an auxiliary edge rolling mill, placed in tandem with a flat mill or between two flat mills. This edge rolling mill may be either a separate, individually-driven stand, or it may be an edge rolling attachment.

Most of the narrow, cold rolled strip, under ¼-inch in width, is made by flattening round wire. This may range from a No. 5 hot rolled wire rod, to drawn wire as small as 0.0375-inch. Larger sizes of rod sometimes are used, especially where a finished round edge is required, but the bulk of the flat wire production is made from No. 5 rod or smaller. There are today something over 400 stands of rolls and about 100 manufacturing concerns in the United States, specializing on cold rolled flat wire in widths under ¼-inch.

The beginning of the cold rolled strip industry in America is to be found some time prior to 1859, as on that date, records show that the Washburn and Moen Wire Works, Worcester, Mass., commenced the production of flat wire for hoop skirts, and for that purpose used a rolling mill which they had purchased, second hand.

What is probably the earliest record of the cold rolling of soft steel strip in the United States is about 1871 when the Stanley Works, New Britain, Conn., made some tests on the cold rolling of samples of American and Swedish wrought iron and crucible steel.

Different Speed Ranges

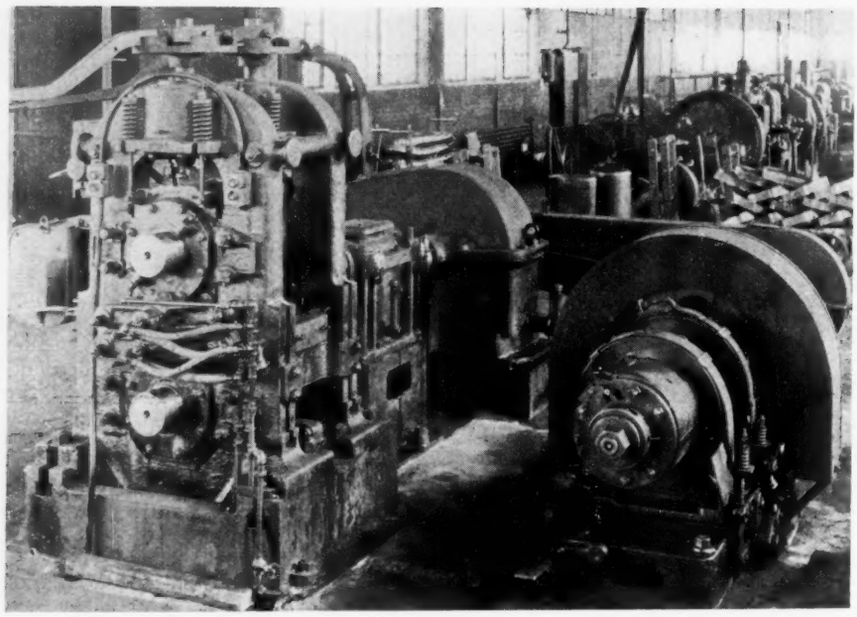
Modern tandem mills generally are built with a speed range of 2:1 on the larger sized mills and 2½ or 3:1 on the smaller sized mills. One of the newest tandem mills is equipped with a 2:1 speed range on each mill, and in addition the entire group of mills is driven by an individual motor generator set, which by voltage control will give additional range for the group as a whole, down to approximately one-half that obtainable by the field control.

At some time after the advent of the tandem mill is was found that the use of tension between stands, as well as between the reel and the last stand, was a desirable condition. It became general practice to maintain tension on the strip from the first pass to the reel, the rollers making a practice of taking up the slack as soon as the strip was well entered into the mill.

The result of this practice was that the strip was maintained straight and flat during the entire operation of rolling. It would seem as if less force were required to straighten the strip if it were applied at the same time that the material was under compression by the rolls, than if the compressive force were absent. Actually it is almost impossible to straighten a thin strip sideways under any other conditions.

The use of antifriction bearings

SINCE the introduction of cast-steel rolls a century ago, the art of cold rolling steel has been placed on a high plane. Some of the development stages through which the cold rolled strip industry has passed are described in the accompanying paper which was presented at the fall meeting of the American Iron and Steel institute, New York, Oct. 24. The author, Stephen Badlam, is consulting engineer, Pittsburgh.



Modern 4-high mill with rolls of 4 and 16-inch diameter and 12-inch face used for the production of high-carbon steel specialties

in rolling mills is a development that it is natural to consider as something of comparatively recent introduction. A study of the art, however, shows that, as far back as 1890-1895, roller bearings were being applied to roll necks, both in hot rolling mills and in cold rolling mills.

Rolls Are Nondriven

One of the outstanding developments of the period from 1920 to 1930 is the Steckel mill for the production of cold rolled strip in the thinner gages. The mill is based upon the use of rolls of small diameter, the deflection of which under the rolling pressure is prevented by larger backing rolls having an antifriction mounting, drawing the strip through the pass of the rolls, which are nondriven, by tension exerted on the strip; and reversing the direction of rolling after each of the passes, which, in practice, are comparatively light.

The use of small working rolls, supported by larger backing rolls, affects the power requirements in two different ways, the result of which, as compared with the usual 2-high mills is a substantially reduced power requirement for rolling. The bearing pressure is less on account of the reduced arc of contact of the working rolls with the metal. The bearing velocity is less, in proportion as the backing rolls are greater in diameter than the working rolls.

The application of tension to the strip, in conjunction with the rolling pressure, applied through rolls of sufficiently small diameter, also affects the character of the delivered strip in that it secures a straight and flat delivery of the strip, relatively free from waves and buckles and permits of a considerably greater reduction without annealing than when rolling without tension and with rolls of the diameters usual in 2-high mills.

Others have used small rolls, backed by larger supporting rolls, both with and without antifriction bearings on the backing rolls, and its advantages have been well understood. Others have used tension combined with pressure during rolling, and its effects were well known. The reversal of direction of rolling has been common practice.

Three principles have been combined into a rolling procedure, for the production of strip under 0.010-inch thick and in widths 6 inches and over, that represents a distinct advance over previous practice. The combination of these principles, has secured reductions exceeding 95 per cent without intermediate annealing, has produced a product smooth and flat and having an edge substantially free from checks and cracks, and with a resulting hardness not much greater than that produced by reduction in the usual way of 60 to 70 per cent.

Speed Factor Important

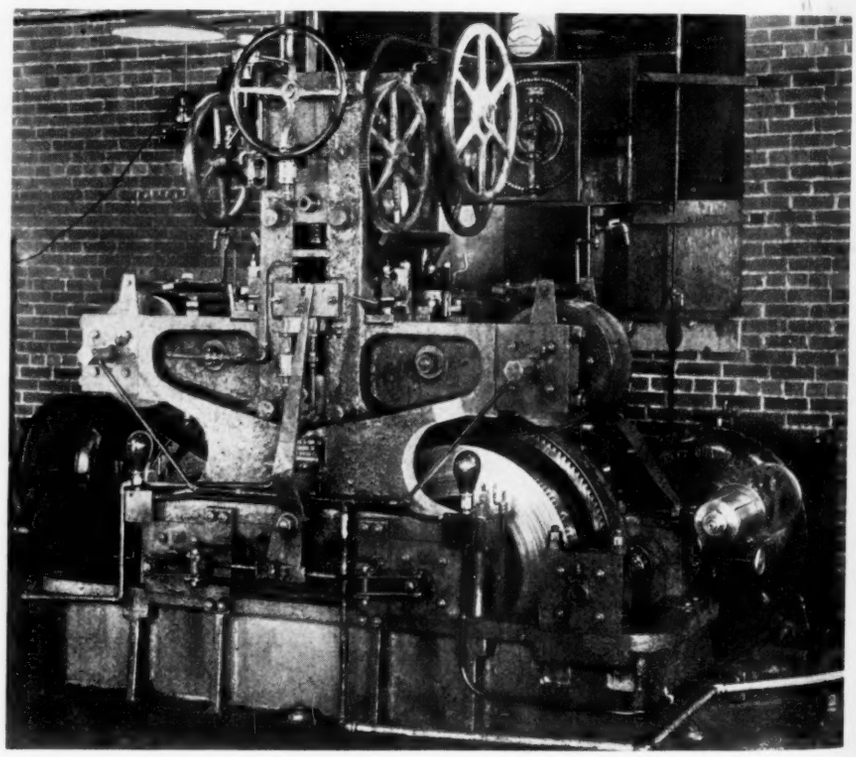
The most important principle perhaps from a commercial standpoint, is that the mill can be operated at speeds, several times higher than was the practice with the old type of mills.

The Steckel mill, as actually constructed in its smallest size, comprised:

1. A roll housing carrying two small working rolls of diameter of 2¼-inch and 7½-inch face and two backing rolls of a diameter of 24 inches, and having roller bearings on the necks. The rolls are furnished with the usual adjusting mechanism for vertical and lateral adjustment. None of the rolls are driven.

2. Two reels, one on each side of the rolls, and below the level of the pass, the strip passing around a water-cooled roller, or idler pulley, in passing from the rolls to the reel and vice versa.

3. Two clutches connecting the two reels to a motor, so that the



View of Steckel-type mill of the smallest size showing the relation of the parts to each other

reels may be operated in opposite directions, the one pulling the strip through the rolls, while the other is allowing the strip to feed into the rolls. Brakes are provided on the reels so that the strip is prevented from over-running, and maintained under slight tension, sufficient to insure its leading into the rolls straight, at high speed.

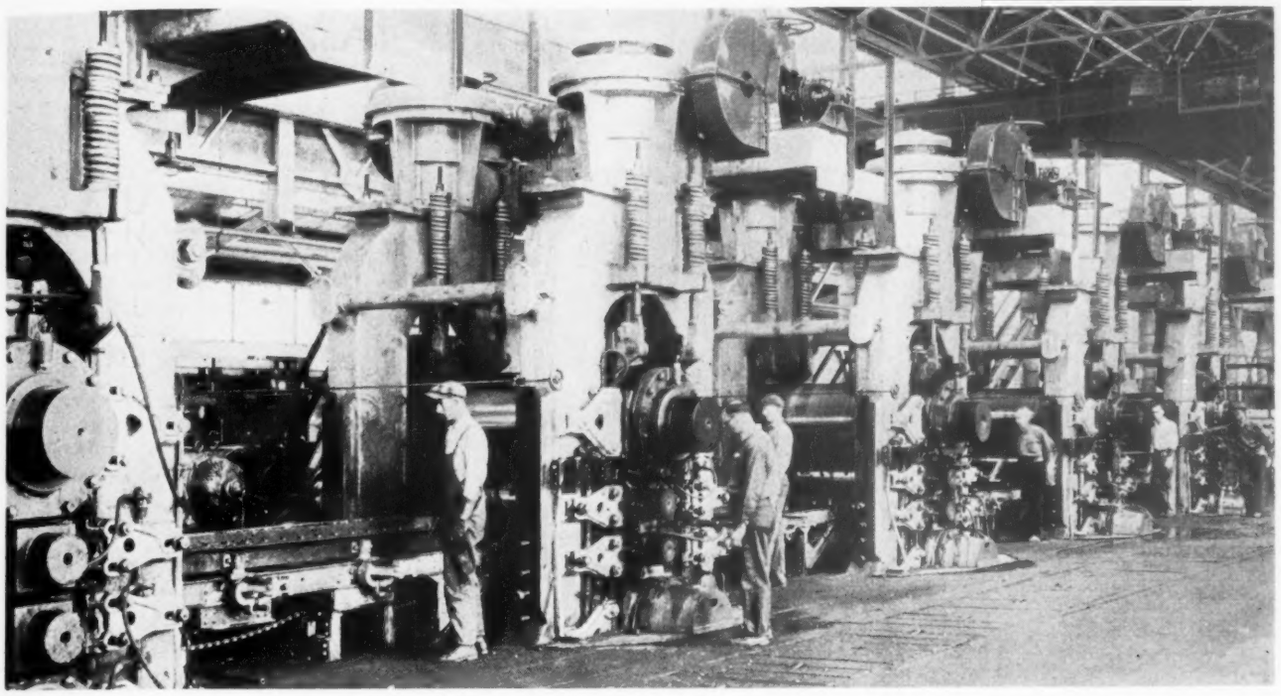
4. A motor so arranged as to drive either reel at will.

The coil of pickled, hot rolled strip, of about 14 gage (0.083-inch), is threaded through the rolls and the end attached to one reel, the strip being bent around the cooling roller between the rolls and the reel. The rolls then are screwed down so as to effect a reduction on the strip and the clutches positioned so that the reel will pull the strip. The motor is started and the strip pulled through the rolls until only a short length is left unreduced. The clutches are released and the stub end attached to the other reel, and the rolls screwed down to effect a further reduction. The clutches then are positioned so as to reverse the direction of rotation of the reels and the strip is wound back on the other reel.

These operations then are repeated, the strip receiving a further reduction with each pass until it reaches the desired gage. It may be noted that the ends of the strip never leave the reel to which they were originally attached, and therefore there is always a length of strip, at each end, sufficient to reach from the reel to the rolls, which retains its original thickness. This is waste and is cut off when the coil is finished.

The entire reduction, in some cases from 0.160 to 0.002-inch is done without removing the strip from the reels, and without annealing at any stage of the operation. After the strip is once running freely through the mill for each pass, the mill may be speeded up, in some cases to as much as 1500 feet per minute.

In addition to the mill described having 7½ inches face rolls, mills now have been built and are in operation having rolls of 18-inch diameter and of 24-inch face, and mills are under construction having rolls of a face of 38 inches.



Five 4-high cold mills which were installed in 1927 for rolling 16-gage sheets to 22 gage

Rolls Short Sheets

The American Rolling Mill Co., in 1927, installed five 4-high cold mills at its Ashland plant. These mills were laid out with the intention of rolling, not in a long strip, but in short sheet lengths. The cold mills were of the roller bearing, backing roll type, with rolls 14 and 34 inches by 58 inches, and each was driven by a 600 horsepower, adjustable-speed motor. The sheets from the continuous hot sheet mill, at about 16 gage, are pickled and then cut into lengths suitable to produce a single finished sheet. These short lengths then are carried on a traveling belt to the cold mill and entered into each of the five stands in succession, the piece never being in more than a single stand at the same time.

Sheets ordinarily are reduced from about 14 or 16 gage to 20 to 22 gage in the five passes. After cold rolling the sheets are box annealed and then given a skin rolling on the sheet mill cold rolls.

Oklahoma Plant Largest Arc-Welded in South

The new arc-welded building of the American Tank & Equipment Corp., Oklahoma City, Okla., described and illustrated on Page 44 of the Oct. 16 issue of STEEL was referred to as being 140 feet long, 26 feet wide and 45 feet high. The dimenisons should have been given as 260 feet long, 140 feet wide and 45 feet high. This building was completed in six weeks and is said to be the largest all-welded building erected south of the Chicago territory.

Manganese Group To Meet

Reports from the manganese districts, discussions of the newer methods of beneficiation, market conditions, transportation and the world manganese situation will be embodied in the program of the third annual meeting of the American Manganese Producers association at Mayflower hotel, Washington, Nov. 10-11. At the banquet to be held the evening of Nov. 10, the Russian situation and its effects on American industries and labor will be discussed. James W. Gerard, former ambassador to Germany, will preside as toastmaster at the banquet to be held at the Mayflower hotel.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

USES:

Silicon Steel

Special steel and continuous construction result in economies in Mississippi river highway bridge, in Engineering News-Record, Oct. 9, 1930, p. 572, 3½ pp., 7 illusts.

Continuous-truss construction over two channel spans of 627 feet, and extensive use of silicon steel in the trusses, are special features in the 1257-foot highway bridge now being built across the Mississippi river at Quincy, Ill. After careful comparison of continuous-truss simple span and cantilever designs, the first was found to be the most economical, while a further noticeable economy was effected by liberal use of silicon steel.

—STEEL 10-30-30

Spring Steel

Grade of steel used for fine springs and care used in their manufacture, discussed in Metal Progress, October 1930, p. 33, 5 pp., 4 illusts.

For the reason that small permanent sets will occur if a spring is overloaded, music wire springs will change in length slightly if worked at undue high stresses. While cold drawn wire is tough enough to curl into a pigtail, it cannot take a square bend. For springs requiring such drastic formings or for springs requiring wire of diameters, say 0.25-inch and larger, an annealed wire is used, which is quenched and tempered after forming. Heat treated wire has a much higher elastic limit for a given ultimate strength than hard drawn wire; consequently, a spring which must recover its shape exactly even after heavy load, like a scale spring, is made of heat treated wire.

—STEEL 10-30-30

MISCELLANEOUS:

Roller Bearings

Results of power consumption tests on blooming and bar mills equipped with roller bearings, presented by F. Waldorf, in Iron and Steel Engineer, September 1930, p. 442, 13 pp., 41 illusts.

Data in chart and tabular form include analyses, temperature and elongation of steel; rate of compression; peak loads; coefficient of plain bearing roll neck friction, detail of passes, etc. The tests show that rolling pressures as high as 1,135,000 pounds are encountered while rolling up to 22-inch diameter ingots in a 35-inch blooming mill. The coefficient of friction for 20½-inch necks on plain bearings is about 0.041 with the probability that as lubrication is broken down the coefficient may approach 0.06 or more. Rolling pressures as high as 747,000 pounds are attained in the 28-inch mill and a maximum of 270,000 pounds in the 22-inch mill. The coefficient of friction of 14-inch diameter necks on plain bearings averages about 0.071, but with defective lubrication it may be higher.

—STEEL 10-30-30

Filing Drawings

Files and filing systems for the drafting room, discussed by E. L. Chevraux, in Machine Design, October 1930, p. 32, 3½ pp., 2 illusts.

The majority of steel filing cabinets are preferable to wooden units because of their indestructible qualities and resistance to atmospheric changes, obviating the sticking and binding of drawers. Their fire retarding and rodent and vermin-proof qualities also serve as good recommendations. Properly designed and processed, horizontal plan-drawer files offer a dust and moisture-proof construction in which drawers are provided with hoods at the rear and double-hinged compressor flaps at front, or flexible blanket protectors, preventing tracings slipping out of place and insuring their being subjected to a minimum of curling, crumpling and tearing. These features also prevent friction between contents of a drawer and the bottom of the drawer above. Some drawers are fitted with a tracing lifter. The author cites many ideas and suggestions on the design of cabinets.

—STEEL 10-30-30

FABRICATION:

Nitriding Progress

Development and commercialization of the nitriding of steel, discussed by Robert Sergeson, in Metal Progress, October 1930, p. 38, 4 pp., 6 illusts.

Higher surface hardness can be obtained by nitriding than by any other known means of case hardening or heat treating. The nitrided case may be heated to 925 degrees Fahr. without loss in hardness at elevated temperatures. The nitrided case resists corrosion of atmosphere, crude oils, alkalies, tap water, gasoline and salt spray. Small and intricate parts as well as large parts may be hardened free from distortion.

—STEEL 10-30-30

PRODUCTION:

Tank Cars

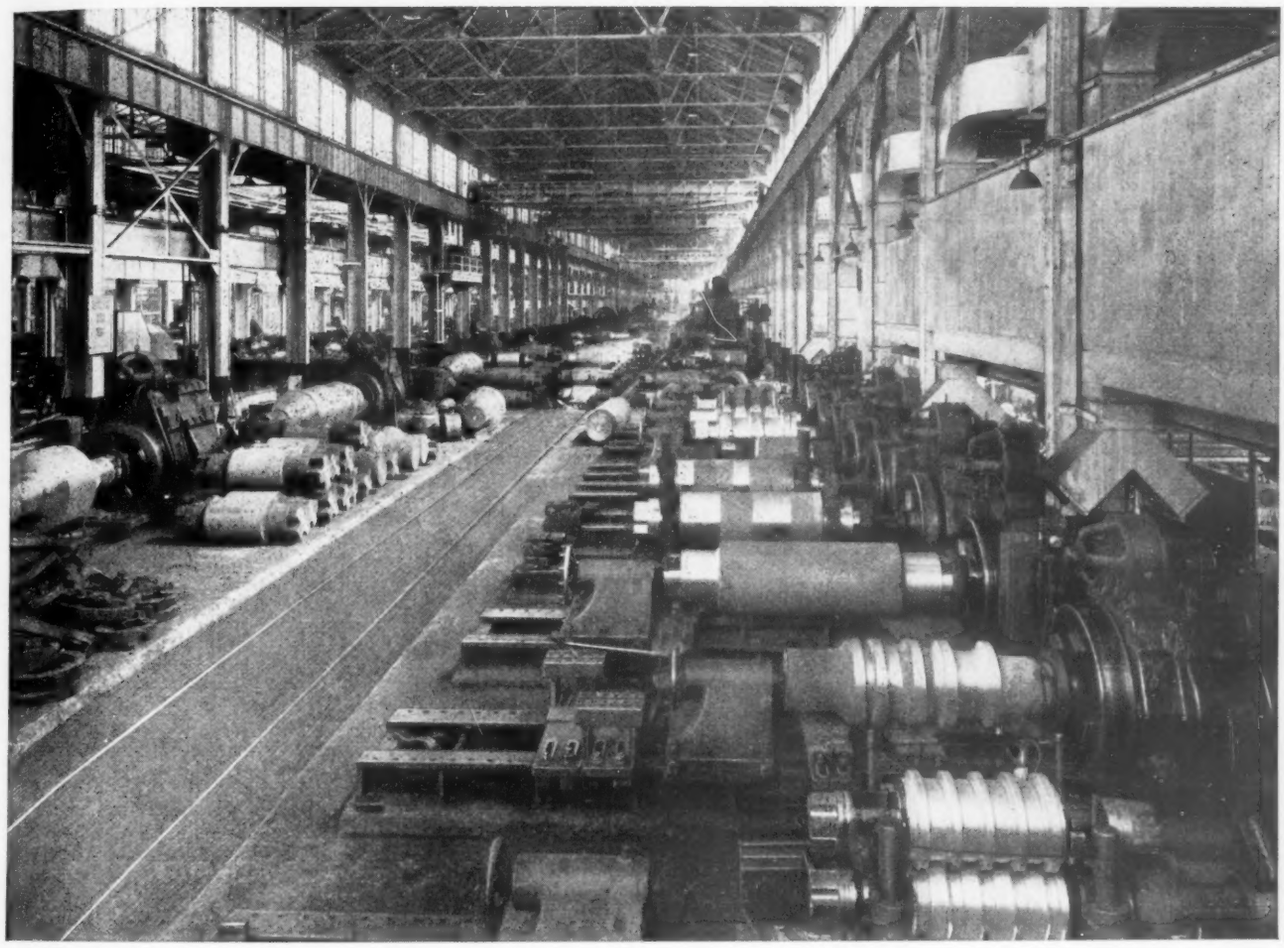
Features to consider in purchasing and maintaining rolling stock of this type, discussed by F. D. Hartford, in Chemical and Metallurgical Engineering, October 1930, p. 616, 3 pp., 5 illusts.

An ideal material for the tank is one which combines at low cost desired structural strength with the necessary immunity to chemical action. Fundamental factors of design of anchorage are that tank parts be reinforced if necessary to prevent denting or local failure, and that stresses be transmitted to the center sill with the least possible eccentricity. In order to render body bolsters fully effective, the tank bands must be tight at all times to hold the tank in position and arranged so that they may be tightened readily. Internal corrosion of sulphuric-acid tank cars is most conspicuous at the flanged part of the tank heads and the dome shell and along the top of the girth sheets. The life of 20 years, predicated by 5 per cent straight depreciation per year, well represents the average longevity of chemical tank cars over the country as a whole.

—STEEL 10-30-30

MESTA ROLLS

"MESTA SPECIAL"
Alloy Steel Rolls
Carbon Steel Rolls
Chilled Iron Rolls
Sand Iron Rolls
Alloy Iron Rolls



View in Mesta Roll Finishing Department

MESTA MACHINE COMPANY

Pittsburgh, Penna.

Machine Tools and Plant Equipment

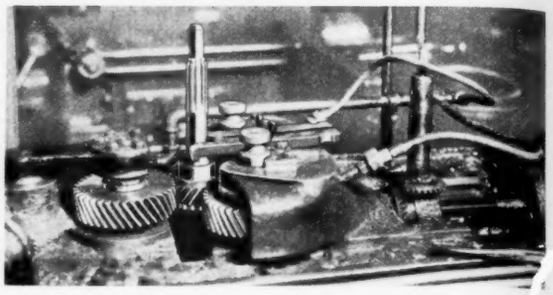
"Without machine tools modern machinery could not be built."

—Joseph W. Roe

Electric Furnace Provides Thorough, Uniform Heat

C. I. Hayes Inc., Providence, R. I., is marketing a high-speed electric furnace which is said to be able to thoroughly and uniformly heat the work, giving whatever time and temperature is required and yet not scale or pit the work, and not decarburize the surface. This makes for a better product by effecting a proper distribution of carbides with the structure, and yet without excessive grain growth.

The furnace allows control of the chamber atmosphere with the door closed or raised. When working with the door closed, the whole hearth area is still visible through the peep hole. The door can be automatically operated by air if desired, thereby leaving the heat treater free to manipulate his tongs and concentrate on his work. Uniform temperature is maintained throughout the chamber.



The simple holding fixture shown in this illustration effectively resists end thrust of spiral spur gears during burnishing operations

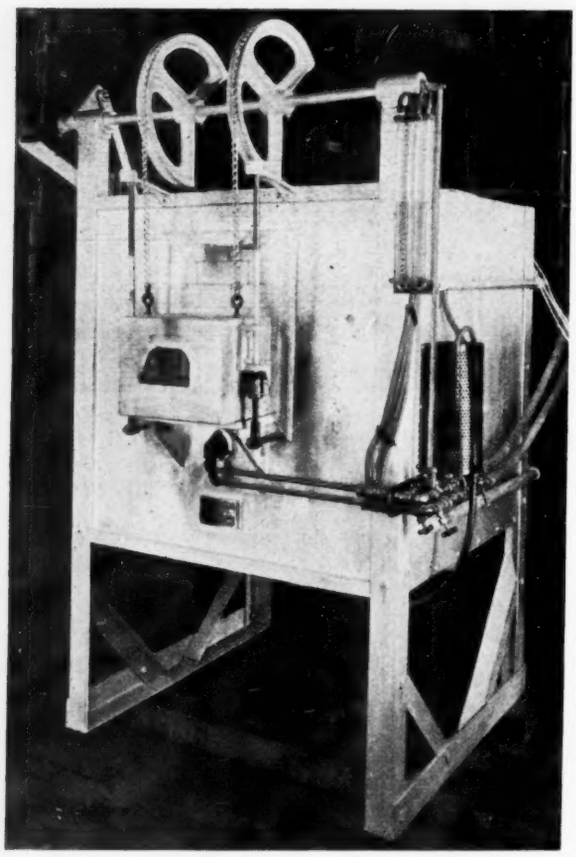
◆

Fixture Holds Spiral Gears During Burnishing

City Machine & Tool Works, Dayton, O., has developed a simple holding fixture, shown in the accompanying illustration, which checks the upthrust of a spiral gear while it is being burnished. With the increasing popularity of spiral gears the problem arose as to satisfactorily burnishing such gears. This differed from regular straight spur gear burnishing in that when spiral gears are burnished under load they tend to crawl out of position.

When burnished in one direction the gear tends to crawl in one direction, and when burnished in the other direction the reverse action takes place. The downward thrust could readily be taken care of by supplying the flat plate which could be formed as part of the approximate locater itself, but taking care of the upward thrust required a little different arrangement. The new fixture, shown in the accompanying illustration, effectively checks this thrust.

The gear burnishing cycle, in order to assure uniformity, includes a determined number of revolutions in one direction, immediately followed by an equal number of revolutions in the opposite direction, necessitating equal restraint on both sides.

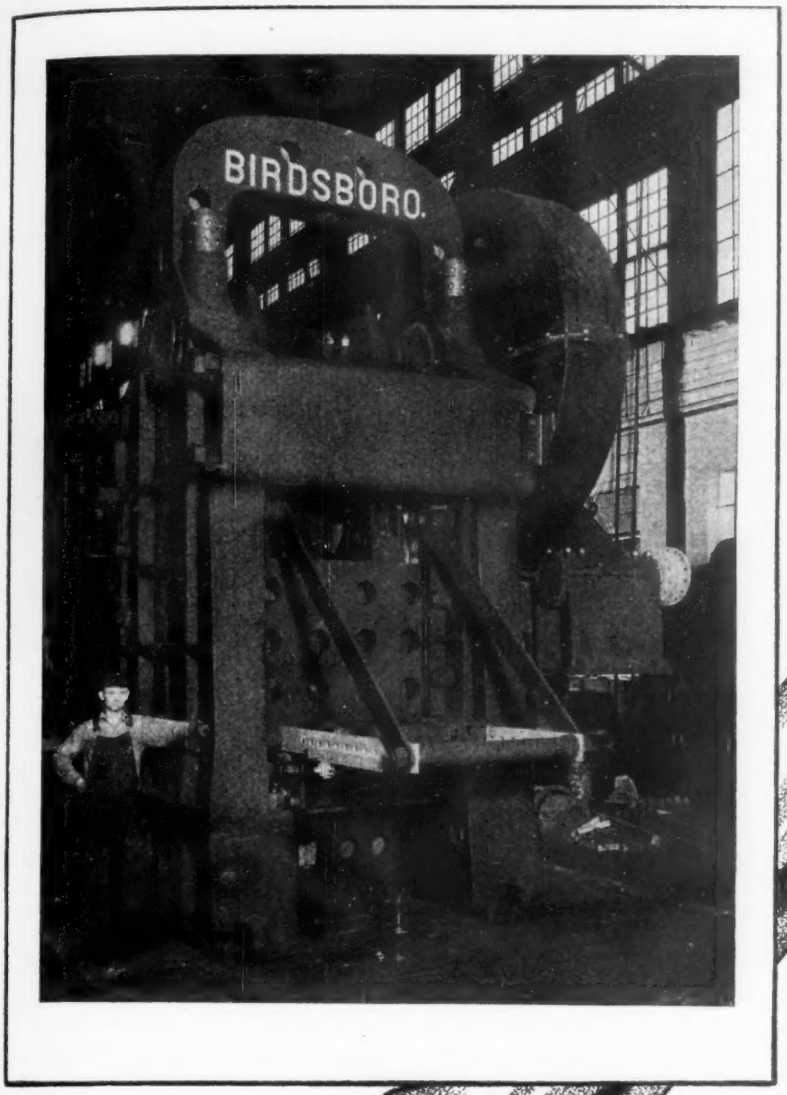


By means of an accurately calibrated combustion attachment using ordinary commercial gas, the internal atmosphere of this electrically heated high-speed steel treating furnace is "made to order" to suit the work

◆

High Speed Shear Cuts 1/4-Inch Boiler Plate

Stanley Electric Co., New Britain, Conn., has designed a plate shear which will cut at a speed up to 10 feet per minute and has a cutting capacity up to ¼-inch boiler plate. On even the largest sheets, the operator has a clear view of all operations and can follow easily and accurately the outline to be cut. Inside cuts can be started at any point within the sheet without making a "starting hole." It is also possible



crushes and shears scrap pipe into charging box lengths

SCRAP pipe, in one of the country's great manufacturing mills, now finds its way enroute to the remelting furnace in double quick time—cut to charging box lengths and crushed to facilitate handling . . . Both operations performed simultaneously on Birdsboro's new crushing and shearing machine.

Designed to handle pipe up to 26″ in diameter with a ¾″ wall, these machines act with utmost mechanical simplicity. Crushing ram and shearing knife driven from one crank through herringbone gear reduction. Length of cut section being governed by rack movement of head.

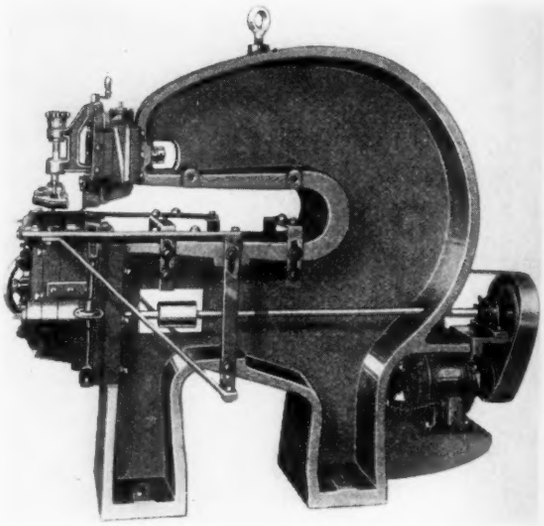
This piece of equipment is but one of many advancements in the steel industry attributed to Birdsboro—*designers and builders of tomorrow's machinery.*

BIRDSBORO
STEEL FOUNDRY AND MACHINE COMPANY
DESIGNERS AND BUILDERS
BIRDSBORO, PENNSYLVANIA

to cut any desired curve and to cut complete circles with a minimum radius of 6 inches on ¼-inch material and less than 3-inch radius on lighter material. It can cut or trim the edges of flat stock to within less than the thickness of the sheet.

The shear, shown in the accompanying illustration, can be made for either motor or belt drive. If a motor is desired, one of 2-horsepower is required, which can be built into the machine, making a complete unit.

These machines are regularly made with 36-inch throats although a model with a 50-inch throat is available. The shear weighs about 5500 pounds and is 6 feet by 2 feet by 6 feet. A shear with 50-inch throat weighs 7500 pounds and is 7 feet by 3 feet by 9 feet.



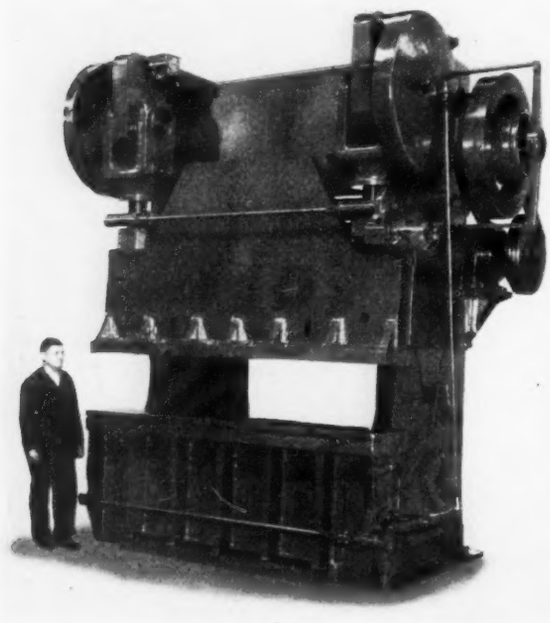
This shear has capacity to cut ¼-inch boiler plate in largest size sheets at 10 feet per minute. It performs inside cuts without requiring a starting hole

All-Steel Press Is Built of Welded Plates

Cincinnati Shaper Co., Cincinnati, has designed and built its first all-steel press, fabricated completely by welding. This is to be used for multiple punching and riveting. It is a 300-ton single-acting double-crank press which includes also automatic oiling, V-belt drive to the flywheel, bronze-bushed eccentric bearings and flywheel and ram adjustment mounted on antifriction bearings.

All main members are of rolled steel plate. The housings are 5¾ inches thick, while bed and ram plates are 4 inches thick. The accompanying illustration illustrates clearly the fabrication principles used to facilitate welding of the plates.

The stroke of the press is 3 inches; motorized adjustment to the ram 6 inches; die area of the ram 16½ inches by 8 feet; die area of the bed 17½ inches by 8 feet; shut height 20 inches; and depth of throat 10 inches.



Single acting 300-ton double crank press has been fabricated by welding, all main members being built up of heavy steel plates

Special Grease Developed for Motor Bearings

General Electric Co., Schenectady, N. Y., announces a new grease for ball and roller motor bearings. This grease is being used in General Electric plants for the initial lubrication of all general purpose motors equipped with antifriction bearings, designed for grease lubrication. It is being used successfully at speeds up to 25,000 revolutions per minute and over a temperature range from 25 degrees below zero to 250 degrees above zero Fahr.

Some of the advantages claimed for this lubricant are: It maintains proper operating consistency under severe conditions over the possible range of service temperatures; allows complete ball or roller motion, has little tendency to gum, cake or separate; contains no water or free acid and will not become rancid; and has film strength to withstand severe end thrust and radial load.

This lubricant is supplied in 2-ounce tubes and 1-pound friction top cans. A table on the instruction sheet accompanying the tube denotes the proper amount of grease to be used in motors of various frame sizes.

Zirconium in Steel Castings Improves Machinability

Electro Metallurgical Sales Corp., 205 East Forty-second street, New York, announces results of practical tests on the use of zirconium in steel foundries to attain easier machinability of steel castings. Turnings 0.004-inch in thickness taken from zirconium treated steel castings can be curled into compact rolls without breaking up, indicating uniformity of texture and freedom from hard spots and porosity. Microscopic examination of these castings shows few impurities, less segregation than usual and also reduced grain-size.

Steel Unresponsive to Stimulants

Bookings and Output Shrink Moderately as Exterior Forces Gather Strength—Railroad Buying Brisk—Structural Activity Wanes—Scrap Still Sinking

NEITHER the price stabilization program presented to the American Iron and Steel institute last week nor the effort to alleviate unemployment by stimulating the construction industries has yet had any influence upon steel and iron. In bookings, production and prices, as a whole, further deterioration is apparent.

Demand for most steel products has registered enough decline in the past fortnight to wash out practically all the improvement in the first half of October. In pig iron and coke, early October commitments were for the quarter; hence, buyers' withdrawal is not significant.

On heavy finished steel, quotations continue fairly stable, but on many light products they are easy and on scrap they still are decidedly soft. There is considerable opinion that the attempt to stiffen prices will be helpful, perhaps eliminating much weakness this quarter.

Production of steel ingots averages 49 per cent this week, compared with 52 the past two weeks and 55 as October opened. Youngstown mills are up a point, to 54 per cent. Pittsburgh is unchanged at 50-55, Chicago at 57-58, and Buffalo at 57. Eastern Pennsylvania, however, is off five points to 53 per cent, Birmingham down five to 45, and Cleveland off 11 points to 24.

Undoubtedly, some requirements for steel will be created by the Hoover employment campaign, but it will take a little time for this business to reach the rolling stage. Among the rank and file of the industry the concensus of opinion is that whatever demand is thus developed will do little more than offset seasonal November and December recessions, and that a genuine upturn cannot be expected before the automotive industry revives, probably spring.

The railroads still continue the most active factors in the steel markets and while most of this business is for 1931 rolling, the efforts to create jobs may expedite releases. With the Virginian out for 600 coal car bodies, 735 freight cars are on inquiry. Interborough Rapid Transit, New York, may buy 289 subway cars. Western Fruit Express has revived its inquiry for 1000 underframes; Pacific Fruit Express wants 600.

The week's rail orders include 15,000 tons by the Chicago & North Western, 10,500 by the Atlantic Coast Line and 1500 by the Charleston & Western Carolina. Baltimore & Ohio is taking bids on 75,000 tons. Including 10,000 tons for the North Western, track fastening inquiry at Chicago totals 30,000 tons. Momentarily the New York Central inquiry for upward of 175,000 tons of rails is expected.

Structural awards, topped by an 8000-ton office building in New York, continue to work down slowly. This week they total 28,288 tons, contrasted with 47,371 tons last week and 41,386 tons a year ago. Awards for the year to date, at 1,580,246 tons, are 14 per cent behind 1929. Pending work is seasonably large, but is not being augmented as rapidly as in September. On the Pacific coast 50,000 tons of structural work is active. Concrete bar orders are heavy.

Demand for plates at Chicago, strong for weeks, slackens as other districts improve. Pittsburgh expects tonnage from car and reviving barge orders. Federal Shipbuilding Co. is low on Grace line ships requiring 24,000 tons, chiefly plates. Newport News Shipbuilding & Dry Dock Co. has bought 9750 tons for the new navy airplane carrier. Bar orders at Chicago also fail to make further gains. Bar iron at Chicago is off $1.

Montana Power Co. will place a 60,000-ton pipe line. Seattle is placing 8600 tons of steel pipe. Sheet, wire and strip bookings generally are lighter. Black sheets are weaker at Chicago, and nail prices still fluctuate. Tin plate users are deferring first-half contracting.

Pig iron, coke, scrap and semifinished steel are inactive.

September exports of iron and steel, at 131,211 tons, were off 20,000 tons, explained chiefly by smaller shipments of scrap. Imports, at 40,285 tons, were up slightly.

Weakness in nails and black sheets lowers STEEL's composite 8 cents this week, to $32.06, another new low.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (Oct. 29, 1930)	**$32.06**
Last week (Oct. 22, 1930)	**32.14**
One month ago (September, 1930)	**32.65**
Three months ago (July, 1930)	**33.21**
One year ago (Oct. 1929)	**36.23**
Ten years ago (Oct. 1920)	**68.61**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Oct. 29, 1930	Sept., 1930	July, 1930	Oct., 1929
PIG IRON				
Bessemer, del. Pittsburgh	$18.76	20.13	20.46	20.76
Basic, valley	17.00	17.75	18.20	18.50
Basic, eastern del. eastern Pa.	17.50	17.90	18.00	19.75
No. 2 foundry, del. Pittsburgh	18.26	19.13	19.46	19.76
No. 2 foundry, Chicago	17.50	17.50	17.90	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.00
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del. Phila.	19.26	19.76	20.26	22.26
Malleable, valley	17.50	18.35	18.70	19.00
Malleable, Chicago	17.50	17.50	17.90	20.00
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	18.50	18.83	19.13
Ferromanganese, del. Pittsburgh	103.79	103.79	103.79	109.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.60	2.60	2.50	2.65
Connellsville foundry, ovens	3.50	3.50	3.50	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	31.00	31.00	31.00	35.00
Sheet bars, open-hearth, Pitts.	31.00	31.00	31.00	35.00
Billets, open-hearth, Pittsburgh	31.00	31.00	31.00	35.00
Wire rods, Pittsburgh	36.00	36.00	36.00	40.00

	Oct. 29, 1930	Sept., 1930	July, 1930	Oct., 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.70	1.90
Steel bars, Chicago	1.70	1.70	1.80	2.05
Steel bars, Philadelphia	1.89	1.89	1.94	2.22
Iron bars, Chicago	1.75	1.75	1.90	2.05
Shapes, Pittsburgh	1.60	1.60	1.65	1.95
Shapes, Philadelphia	1.76	1.66	1.66	2.01
Shapes, Chicago	1.70	1.70	1.75	2.05
Tank plates, Pittsburgh	1.60	1.60	1.65	1.95
Tank plates, Philadelphia	1.80½	1.80½	1.85½	2.15
Tank plates, Chicago	1.70	1.70	1.75	2.05
Sheets, blue anl., No. 13, Pitts.	2.15	2.10	2.15	2.35
Sheets, black, No. 24, Pitts.	2.35	2.40	2.55	2.80
Sheets, gal., No. 24, Pittsburgh	3.00	3.00	3.15	3.50
Sheets, black, No. 24, Chicago	2.60	2.60	2.70	3.05
Sheets, blue anl., No. 13, Chicago	2.30	2.30	2.30	2.50
Sheets, galvanized, No. 24, Chi.	3.15	3.25	3.35	3.70
Plain wire, Pittsburgh	2.30	2.30	2.30	2.40
Wire nails, Pittsburgh	1.95	2.00	2.10	2.45
Tin plate, per base box, Pitts.	5.00	5.25	5.25	5.35
SCRAP				
Heavy melting steel, Pitts.	14.25	15.70	14.90	17.30
Heavy melting steel, eastern Pa.	11.50	13.00	12.50	15.80
Heavy melting steel, Chicago	11.00	12.25	12.00	14.45
No. 1 wrought, eastern Pa.	14.25	14.25	14.25	16.00
No. 1 wrought, Chicago	10.25	11.25	11.25	14.85
Rails for rolling, Chicago	13.50	14.50	14.50	17.05

Sheets

Market Is Quieter and Prices Continue Easy—Automotive Industry's Requirements Lag

SHEET PRICES, PAGE 71

Pittsburgh—Sheet tonnage is light and smaller than during the preceding weeks this month. Prices show a slightly easier tone, with the 2.35c price on black sheets becoming more in evidence. Galvanized usually are 3.00c, although an occasional report of $1 to $2 a ton less is heard. These figures, however, do not represent the general market. Blue annealed plates continue 1.90c to 2.00c, with autobody 3.40c to 3.50c. Tonnage still is confined to small lots for prompt shipment. Requirements of practically all consumers are seasonally light. Automotive tonnage is smaller than a month ago and farm implement builders have not started operations.

New York—Sheet demand is dull and prices are easier. Shading of 3.00c, Pittsburgh, on galvanized sheets is noted, although the majority of sellers still are adhering to that figure. Black sheets now are quotable at 2.40c, Pittsburgh. Blue annealed plates are 1.90c and blue annealed sheets 2.05c, with some shading of the latter figure where the sizes are under 42 inches. However, 2.00c and 2.15c prices on blue annealed plates and sheets, respectively, have not disappeared.

Philadelphia—Sheet demand enables eastern mills to operate at 50 to 80 per cent. The radio industry is the most active buyer. Blue annealed appear firmer at 2.00c, base, Pittsburgh, for the heavy gages, and 2.15c for light. Concessions are made occasionally on specially desirable tonnages. Common black sheets are 2.35c to 2.45c, Pittsburgh. Galvanized usually are 3.00c, with occasional sales at 2.90c.

Buffalo—The market is featureless, and prices are subject to keen competition. District mills are running at 45 to 50 per cent.

Youngstown, O.—The two extremes in the steel sheet trade appear to be dividing current market attention, demand being mainly for common grades and the special alloy and electrical sheets. Valley mills still are operating around 50 per cent. While some common black sheets have been placed at 2.35c, Pittsburgh, considerable business is going at 2.45c. Autobody sheet sales are restricted to immediate needs, quotations ranging from 3.40c to 3.50c, Pittsburgh. Blue annealed are 1.90c to 2.00c for Nos. 9 and 10 gage, with No. 13 gage bringing 2.05c to 2.15c. Galvanized are 3.00c

Cleveland—With occasional releases from large users such as Fisher Body Co., and fairly steady small tonnage orders from scattered consumers, the sheet market continues to drag. The market on autobody sheets is 3.40c to 3.50c, Pittsburgh. With black sheets generally offered at 2.35c, metal furniture sheets become 3.60c, although an effort is made here to hold to 3.70c.

Cincinnati—Demand for sheets is slightly lower, but production schedules are held to about 50 per cent. Inquiries are fairly plentiful.

Chicago—More weakness is shown in black sheets. Prices of 2.45c, mills, are being met in St. Louis territory and in Indiana. Local mills report the bulk of their tonnage on a 2.55c, mill, base for No. 24 black. Shipments of black, galvanized, blue annealed and corrugated roofing sheets are above September. Inland Steel Co. has put in operation its ten Milwaukee hot mills as a relief to unemployment there, but these operations may not continue more than 30 days. Sheet mill activity for the district is about 50 per cent.

St. Louis—Sheet specifications are disappointingly small, especially those from the principal consuming industries. Deliveries to the automotive industry this month are below those of September. New business is placed cautiously. Prices are unchanged.

Birmingham, Ala.—A moderate amount of business continues to be placed with sheet mills in this district. Prospects for the future are considered a little brighter.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh base	2.35c to 2.45c
Philadelphia, delivered	2.64c to 2.74c
Gary, Indiana Harbor	2.55c
Chicago, delivered	2.60c
Birmingham, base	2.60c
St. Louis, del.	2.80½c

TIN MILL BLACK, NO. 28

Pittsburgh, base	2.70c
Gary, base	2.80c

GALVANIZED NO. 24

Pittsburgh, base	3.00c to 3.10c
Philadelphia, delivered	3.29c
Gary Indiana Harbor	3.10c to 3.20c
Chicago, delivered	3.15c to 3.25c
Birmingham, base	3.15c
St. Louis, del.	3.45½c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.15c
Chicago, district mills	2.25c
Chicago, delivered	2.30c
St. Louis, delivered	2.50½c
Philadelphia, delivered	2.44c
Birmingham	2.30c

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base	1.90c to 2.00c
Chicago, district mills	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.19c to 2.29c
St. Louis, delivered	2.35½c
Birmingham	2.15c

AUTOMOBILE NO. 20

Pittsburgh base	3.40c to 3.50c

FURNITURE NO. 24

Pittsburgh	3.60c to 3.70c

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

Tin plate, coke base	5.00
Gary, Ind., base 10 cents higher.	
Long ternes, 24, primes	3.65c
Long ternes, 24, assorted	3.55c
Long ternes, 24, unassorted	3.45c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$1.95 and 2.10
Cement coated nails	2.00 and 2.10
Galvanized nails	4.00 and 4.10

(Per pound)

Polished staples	2.45c and 2.55c
Galvanized staples	2.70c and 2.80c
Barbed wire, gal.	2.65c and 2.75c
Annealed fence wire	2.15c and 2.25c
Galvanized wire	2.60c and 2.70c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.30c
Spring wire	3.30c
Wire, delivered Detroit	2.53½c
Nails, delivered Detroit	$2.38½

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
**7/16-inch and smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Steel Plates

Base, Pittsburgh	1.60c
Philadelphia, del.	1.80½c
New York, del.	1.88c
Boston, del.	2.00c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.78½c to 1.88½c
Lackawanna, N. Y., base	1.70c
Birmingham, base	1.80c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.05c to 2.15c
St. Louis, del.	2.00½c

Structural Shapes

Base, Pittsburgh	1.60c
Philadelphia, del.	1.76c
New York, del.	1.75½c to 1.85½c
Boston, del.	1.88½c to 1.98½c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.83½c to 1.88½c
Lackawanna, N. Y., base	1.70c
Birmingham, base	1.80c
Pacific Coast, c.i.f.	2.15c to 2.25c

Bars

SOFT STEEL

Pittsburgh, base	1.60c to 1.65c
Chicago, base	1.70c to 1.75c
Birmingham, base	1.75c to 1.80c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.25c to 2.35c
Cleve. base, local del.	1.65c
Do, outside delivery	1.60c
Philadelphia, del.	1.89c to 1.94c
New York, delivered	1.93c to 1.98c
Boston, delivered	2.00c to 2.05c
Pittsburgh, cold finish	1.75c to 1.80c
Pittsburgh, forg. qual.	1.85c to 1.90c

RAIL STEEL

Chicago Heights	1.65c
Eastern mills	1.65c

IRON

Chicago, base	1.70c
New York, delivered	1.93c to 1.98c
Philadelphia, delivered	1.89c to 1.94c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c to 2.00c
Stock lengths, mill	1.65c to 1.75c
Chi. billet, over 500 tons	1.70c to 1.85c
30 to 200 tons	2.00c
Under 30 tons	2.45c to 2.85c
Chi., rail steel, over 30 tons	1.50c to 1.60c
Under 30 tons	2.10c to 2.50c
Philadelphia, cut lengths	2.04c to 2.09c

Cold-Finished Steel

Bars, Pitts., Chi., Buff., Cleveland	2.00c to 2.10c
Do, delivered, Detroit	2.20c
Shafting (turned, polished) Pitts., Buffalo	2.10c
Do, (turn., ground) mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh
18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates 31c; bars 28c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloy Steel

Hot Rolled—F.o.b. Mills
Alloy Quality Bar Base is 2.65c

S.A.E	Alloy Diff.	S.A.E	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80-1.10	
2300	1.50	Cr.	0.45
2500	2.25	5100 Chr.	
3100	0.55	spring	0.20
3200	1.35	6100 bars	1.20
3300	3.80	6100 Spring	0.95
3400	3.20	Chr., Ni., Van.	1.50
4100 .15 to .25 Mo.	0.50	Carbon Van.	0.95
4600 .20-.30 Mo.		9250 (flats)	0.25
		9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.70c to 1.75c
Hot strip 6 1/16 to 24-in., Pitts.	1.60c to 1.65c
Hot strip, bands 6 in. and under, Chicago	1.80c to 1.85c
Do, 6 1/16 to 24 in.	1.70c to 1.75c
Cooperage hoop, Pitts.	1.90c to 2.00c
Do, Chicago	2.00c to 2.10c
Cold rolled strip., Pitts., Cleve., 3 tons, over	2.35c to 2.45c
Worcester, 3 tons, over	2.50c to 2.60c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.80c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.80c
Spikes boat, barge, Pitts.	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	75 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00 to 41.50

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread 73 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list 73 off

MACHINE BOLTS

All sizes cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts 73 off

Tire bolts, 60, 10 and 10 off.

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished 73 off

***HEXAGON CAP SCREWS**

Milled 80-10-5 off

Upset 1 in. diam. and smaller 80-10 off

***SQUARE HEAD SET SCREWS**

Milled 85-5 off

Upset 1 in. and smaller 80-10-5 off

*Discounts dated Jan. 23, 1930

Cut Nails, Chain, Piling

Cut nails, c.l., mills	2.45c
Do, less carloads	2.55c
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	2.00c

Bars

Small Gain in Tonnage Holds—Production About Even—Price Weak, with Some Shading

BAR PRICES, PAGE 71

Chicago—Bar mills are unable to gain in tonnage but are losing no ground. One producer is maintaining operations above 60 per cent, while another has both bar mills running, but with ragged schedules. Roll changing has become more frequent. With lake navigation near its close, it is stated eastern competition in bar, plate and shape tonnage is likely to be less pronounced. Mills feel they can hold prices at 1.70c, Chicago base, but do not see immediate possibility for advance. Protections extended for a number of projects are expiring and are not being renewed. Several road machinery and shovel manufacturers are busy on winter schedules, including snow handling products, while quarry and crushing machinery makers will be down until January. Bar iron has declined $1 with the reduction last month in soft steel bars, to 1.70c, Chicago. Rail steel bars are 1.65c, Chicago Heights, to users of commercial shapes.

New York—Steel bars are 1.60c to 1.65c, Pittsburgh, the inside figure representing the market on tonnages.

Philadelphia—Steel bar demand again is dull and buyers generally are specifying minimum quantities against actual needs. Prices are unchanged, 1.60c to 1.65c, Pittsburgh. Demand for iron bars is slow but prices are fairly well maintained and on most sales of common bars the minimum is 1.70c, Pittsburgh.

Pittsburgh—Steel bar producers continue to quote 1.65c, Pittsburgh, on average lots and are endeavoring to maintain this price. Tonnage still is going at 1.60c, however, on more attractive tonnages. Business still is seasonally light, but slightly more active than ten days to two weeks ago. Practically all orders call for only limited tonnage, representing early needs.

Cleveland—Tapering demand still is being encountered by sellers of hot rolled merchant steel bars, both carbon and alloy. The situation so far as the automotive trade is concerned is about 40 per cent of normal for this period. Other consuming lines are paring their orders in harmony with actual needs, nobody piling up stock. Prices are unchanged at 1.60c, Cleveland, for outside shipment and 1.65c, Cleveland, for local delivery.

Reisinger Machine Tool Corp., Rochester, N. Y., has changed its name to Reisinger Machine Works.

Cold-Finished Bar Sales Off from September Rate

Cold Finished Prices, Page 71

Pittsburgh—Cold-finished bar specifications remain light, with October tonnage falling below September. Shipments to automotive interests are off slightly this month and requirements of other consumers lack improvement. The market continues 2.10c to May users, with a test lacking on large tonnages.

Cleveland—Diversified industries continue to be represented in a small way on books of cold-finished bar producers. Demand is about 40 per cent of normal for this period. Automotive tonnage is largely lacking, although occasionally a fair sized order is placed. The price continues 2.00c to 2.10c, Cleveland.

Fewer Aliens Arriving

Washington—A total of 34,540 aliens was admitted to the United States and 34,411 departed during August, compared with 41,785 admissions and 29,294 departures in August, 1929, according to the bureau of immigration, department of labor.

The statistics show also a fewer number of American citizens now arriving but a larger number departing than last year.

Plates

Western Tank Inquiry Totals 20,000 Tons—Eastern Barge and Ship Work More Active

PLATE PRICES, PAGE 71

Chicago—Plate mills are down to about 50 per cent operations, compared with 80 to 85 per cent during most of September. News of pipe line projects is awaited, and it is probable no plate skelp for pipe line work will be stocked. It is understood a pipe line project on the West coast is materializing for about 2000 tons. About 2500 tons in oil tank work has been placed for Pacific coast refineries, and 5000 tons are added to inquiry, making active 12,000 to 15,000 tons. All tank inquiry is estimated as close to 20,000 tons, some of which awaits oil conservation plans in Oklahoma. Plate prices are fairly steady at 1.70c, Chicago.

New York—Plates are 1.70c, Coatesville for carload lots and 1.75c, for less than carload lots. The Federal Shipbuilding Co. is low on the four steamers for the Panama Mail line, subsidiary of W. R. Grace & Co., requiring approximately 24,000 tons of steel, of which two-thirds are plates. General buying is slow.

Philadelphia—Plate demand is quiet, with eastern mills operating at about 50 per cent. Despite occasional concessions on special tonnages, the usual price continues 1.70c, base, Coatesville, Pa. The Philadelphia Gas Works is in the market for a gasholder to require 4400 tons of plates, shapes, sheets and concrete bars, mainly plates.

Pittsburgh—Freight car work for the Baltimore & Ohio and Virginian railroads and signs of renewed activity in barge building brighten the plate market. Recent barge awards will require 500 tons of plates and shapes, and there is some possibility that the Inland Waterways Corp. may be in the market for 100 to 150 barges in the near future. A welded steel barge now is under consrtuction for this line and the success of this type will determine future construction on a large number of such barges. Plates are fairly steady at 1.60c, Pittsburgh. Tonnage shows little change but continues seasonally light.

Cleveland—Plates business continues small. Even on the small orders 1.60c, Pittsburgh, applies.

Washington—The Newport News Shipbuilding & Dry Dock Co., Newport News, Va., has placed the 9750 tons of steel, mainly plates, required for the government airplane carrier, recently booked. The carbon steel went to Bethlehem Steel Co., and the specially treated steel to the Carnegie Steel Co.

Contracts Placed

4000 tons, fabricated plate work and steel pipe, interlining for 36 shafts, new water tunnel, board of water supply, Yonkers to Brooklyn, N. Y., to Heat Transfer Products Inc., New York; Patrick McGovern Inc., New York, general contractor.

1200 tons, steel footings, third section, West Side elevated highway, Fifty-

ninth to Seventy-second street, New York, to Heat Transfer Products Inc., New York, subsidiary of American Locomotive Co.; Senior & Palmer, New York, general contractors.

700 tons, 36-inch welded pipe, Spokane, to Steel Tank & Pipe Co., San Francisco; previously reported to Western Pipe & Steel Co.

300 tons, three barges, for Suiter Material & Transport Co., Manchester, O., to Dravo Contracting Co., Pittsburgh.

200 tons, two barges for Independent Sand Co., Wheeling, W. Va., to Dravo Contracting Co.

Unstated tonnage, 34,000 square feet, steel sheet piling, United States Engineers, Memphis, Tenn., to Jones & Laughlin Steel Corp., Pittsburgh.

Contracts Pending

5000 tons, 36 and 44-inch riveted, welded or lock-bar pipe line, San Francisco; bids Oct. 29.

1700 tons, 38 to 54-inch welded steel pipe line, Los Angeles; bids Oct. 27.

250 tons, 130-foot tug for Honolulu interests; bids in at Seattle.

125 tons, water tank, Spokane; general contract to Morrison & Knudson, Boise, Idaho.

110 tons or more, two water tanks, Seattle; bids in November.

Iron Ore Shipments Slower; Season Under 50,000,000

Iron Ore Prices, Page 82

Cleveland—October lake shipments of iron ore show a drop of about 1,000,000 tons from those of September. The total for the month, based on reports for 23 days, is indicated as 5,400,000 tons, though this may be reduced by final figures for the last eight days. To Nov. 1 the movement appears to be 44,464,000 tons, and with the early closing of shipping it is probable the season's total movement will not equal 50,000,000 tons, compared with 66,163,637 tons in 1929. No buyers are in the market.

Arrangements are being made by the Oliver Iron Co., Steel corporation subsidiary, and the Cleveland-Cliffs Iron Co., for the purchase by the Oliver of the Holmes mine on the Marquette range. The Holmes reserves are of limited duration, while the Oliver company has workable adjacent reserves which will be mined through the Holmes shaft.

Trade Tools for Wheat

Washington—Federal authorities report that some manufacturers of farm implements have begun accepting wheat from farmers in lieu of cash. It is recalled that five years ago the International Harvester Co. accepted corn in place of cash. The price set for wheat is said to be slightly above the present market.

Railroads

600 Car Bodies for Virginian Expands Inquiry List—Four Rail Orders Total 28,400 Tons

TRACK MATERIAL PRICES, PAGE 71

New York—One inquiry is out from the Virginian Railway for 600 55-ton hopper bodies. This brings total pending here to 735 freight cars. Fresh rail inquiry includes 75,000 tons for the Baltimore & Ohio. Delay still attends the issuance of the New York Central rail inquiry for approximately 175,000 tons. Locomotive demand is light.

Pennsylvania awarded first quarter steel wheel requirements to Southern Wheel Co., American Car & Foundry Co., Pressed Steel Car Co., New York Car Wheel Co., Griffin Wheel Co. and Baff Foundry & Machine Co. The original inquiry called for approximately 26,000 wheels.

Pittsburgh—Inquiry from the Virginian Railway for 500 to 600 new bodies for coal cars following the recent Baltimore & Ohio award gives a brighter tone to the car equipment market. Bids on the Virginian inquiry close Nov. 3. Inquiry from eastern roads for rails and fastenings continues light and specifications still are seasonally slow.

Chicago—Rails mills have been notified that several thousand tons of rails are to be shipped in November and portions of other tonnages closed recently will be ordered out in December. Chicago & North Western awarded 15,000 tons of rails. It has 14,000 tons on previous contracts to be released shortly, in addition to a small tonnage on hand. That road also has about 10,000 tons of track fastenings on inquiry, making total track accessories on inquiry about 30,000 tons. Chicago district mills expect about 25 per cent of Baltimore & Ohio rails. Of New York Central rail tonnage about 60 per cent normally goes to the Chicago district but no definite report on this inquiry has appeared here so far.

Birmingham, Ala.—Rail, accessory and car specifications are absent and plants are idle. A few orders are being negotiated.

Locomotive Orders Placed

Chicago Great Western, six Texas type locomotives, to Lima Locomotive Works, Lima, O.

Great Northern, six freight locomotives costing $650,000, to own shops at Hillyard, Mont., for 1931 construction.

Rail Orders Placed

Atlantic Coast Line, 10,500 tons, to Carnegie Steel Co., Pittsburgh.

Charleston & Western Carolina, 1500 tons, Carnegie Steel Co., Pittsburgh.

Chicago & North Western, 15,000 tons of rails, 10,000 tons to Illniois Steel Co., Chicago, and 5000 tons to Inland Steel Co., Chicago.

International Railways of Central America, 1400 tons of 70-pound rail, 10 miles, with tie plates and accessories, to replace a 60-pound Atlantic section line, to United States Steel Products Co., New York.

Car Orders Pending

Great Lakes Steel Corp., Ecorse, Mich., 50 charging cars.

Interboro Rapid Transit Co., New York, 289 subway cars; inquiry out shortly.

Pacific Fruit Express, 600 steel underframes; believed to be for cars to be built at own shops.

Virginian Railway, 600 55-ton hopper coal car bodies; bids Nov. 3.

Western Fruit Express, 100 underframes, inquiry revived.

Locomotives Pending

Chicago & Illinois Midland, five or six locomotives.

Inland Steel Co., two switch engines.

Rail Inquiries Pending

Baltimore & Ohio, 75,000 tons; delivery over first five months, 1931.

Tin Plate Contracts for First Half Deferred

Tin Plate Prices, Page 71

Pittsburgh—Tin plate continues in a quiet market. Specifications show little change and are fair for this period. Consumers are deferring the signing of first half contracts although books now are open, at $5 per base box. Mill operations still are declining with the current average 50 to 55 per cent.

New York—Large consumers of tin plate continue to postpone contracts for the first half. An effort is being made to shade the currently quoted $5, Pittsburgh, per base box.

Foundry Plant Is Sold

William J. Sweet Foundry Co., 8 Lister avenue, Newark, N. J., has sold to the General Brass Foundry Co., its former plant at Irvington, N. J., from which it moved a year ago to occupy its larger plant at Newark. The General Brass Foundry Co. will manufacture nonferrous castings. A previous mention stated this company had bought the plant and business of the Sweet company.

Structural Shapes

8000-Ton Office Building at New York Top List—Award Total Under High Levels of Past Two Weeks—Inquiries Include Bridges, Subways and Office Buildings

STRUCTURAL SHAPE PRICES, PAGE 71

Chicago—About 7000 tons in structural inquiry is out, while awards total about 4000 tons. As a part of Chicago's 6-school program, 3000 tons for one project now is being figured. Two others awarded total 4500 tons. Fabricators here are figuring on caissons and a viaduct at Cincinnati totaling 6600 tons. Structural mills operate below 60 per cent. Plain material prices are 1.70c, Chicago. Several protections at lower levels extended early in September have been withdrawn. Jobs have been filled, and it is understood mills refuse to give further protection on individual projects. No more world's fair buildings will be let this year, the third group having been closed.

Boston—Among recent structural awards, 1200 tons for a state bridge at Tyngsboro, Mass., to Boston Bridge Works Inc. was the largest. Two post office buildings, a state institution and a bridge make up an aggregate of 631 tons pending.

New York—New business in structural shapes is generally at 1.855c minimum, delivered New York. Some shops covered well into October, however, and the market still is being tested. Fabricated and erected steel prices also are firmer. New work coming out is lower, although a fair volume of engineering and bridge projects continues up for figures. A 32-story office building, 8000 tons, went to American Bridge Co. Three more apartments are up.

Philadelphia—Shape demand is fairly well maintained. Eastern mills operate 60 to 65 per cent. The usual price on new business is 1.70c, mill, or 1.76c, Philadelphia, on plain standard shapes, with occasional concessions. Some large fabricators, however, still are able to specify at third quarter prices.

Pittsburgh—New structural steel orders and inquiries usually are limited to lots of less than 100 tons. General contract for Federal Reserve bank building here, 800 tons, went to Mellon-Stuart Co. Specifications for plain material show little change from those of a month ago. The market continues 1.60c, Pittsburgh.

Buffalo—A 350-ton shape order for a factory building is the largest for this week. New York Central railroad viaduct, 2100 tons, is expected to be awarded next week.

Cincinnati—General contract for Western Hills viaduct, 6000 tons, went to MacDougald Construction Co., Atlanta, Ga.

Cleveland—Prospects for first quarter shape tonnage and building activity are increasingly bright. State highway bridges, county and city bridges loom up importantly, some being ready to proceed provided that bond issues are passed at the fall elections. Bids close early in November on the John Marshall high school building, 800 tons, and two more schools are the program for immediate construction after that is awarded. Numerous small jobs are appearing in this immediate vicinity and in the southern and eastern sections of Ohio. Mills report specifications steady but small. The 1.60c, Pittsburgh, price is upheld.

Birmingham, Ala.—Recent 5-day week schedules in fabricating shops are being maintained. Kentucky bridge work is aiding the situation in this section. Several jobs in the immediate vicinity were placed during the past several weeks.

Contracts Placed

8000 tons, 32-story store and office building, 326-46 West Forty-second street, New York, to American Bridge Co., Pittsburgh; Starrett Bros. & Eken general contractor; Raymond Hood, Godley & Fouilhoux, architects.

3100 tons, building, Girard Trust Co., Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.

2500 tons, Steinmetz senior high school, Barry and Melvina avenues, Chicago, to Gage Structural Steel Co., Chicago, at $58.90 a ton.

1600 tons, United States assay office, South street, New York, to Bethlehem Steel Co., Bethlehem, Pa., instead of Lehigh Structural Steel Co., Allentown, Pa., as noted in STEEL of Oct. 16; Great Lakes Construction Co., Chicago, general contractor.

1350 tons, annex, New York Times Publishing Co., New York, to McClintic-Marshall Co., Pittsburgh; Albert Kahn Inc., Detroit, architect and engineer.

1300 tons, apartment, Eighth avenue and West Twelfth street, Abingdon square, New York, to Harris Structural Steel Co., New York; Bing & Bing, builders.

1200 tons, apartment, Hudson and West Twelfth street, Abingdon square, New York, to American Bridge Co., New York; Bing & Bing, builders.

1200 tons, dam gates for power project at Rock Island, Wash., to Wallace Bridge & Structural Steel Co., Seattle.

1200 tons, state bridge, Tyngsboro, Mass., to Boston Bridge Works Inc., Boston.

1000 tons, recent award 5000 tons, building, Kansas City Power & Light Co., Kansas City, Mo., to Kansas City Structural Steel Co., Kansas City, Kans., should have been 6000 tons.

760 tons, Ardmore boulevard bridge, Pittsburgh, to Fort Pitt Bridge Works Co., Pittsburgh.

750 tons, smelter addition, Noranda Mines Ltd., Noranda, Que., to Toronto Iron Works, Toronto, Ont.; Disher Steel Construction Co., builder.

700 tons, plant, Simonds Saw & Steel Co., Fitchburg, Mass., to New England Structural Co., Boston; through the Austin Co.; listed last week with Austin Co. as fabricator.

550 tons, store building, S. H. Kress Co., Spokane, to Minneapolis Steel & Machinery Co., Minneapolis.

540 tons, bridges, Hackensack and Passaic rivers, New Jersey, Pennsylvania railroad, to Fort Pitt Bridge Works Co., Pittsburgh.

500 tons, steel pole line, Southern Sierras Power Co., Calipatria, Calif., to Pacific Coast Steel Corp., San Francisco.

500 tons, highway bridge at St. Peter, Minn., to Minneapolis-Moline Power Implement Co., Minneapolis.

400 tons, fabricating shop addition, Chicago Bridge & Iron Works, Birmingham, Ala., to Virginia Bridge & Iron Co., Birmingham.

400 tons, building, University of Manitoba, Fort Garry, Man., to Dominion Bridge Co. Ltd., Winnipeg, Man.

350 tons, factory, Amherst, N. Y., to Kellogg Structural Steel Co., Buffalo.

300 tons, steel pole line, Pacific Gas & Electric Co., Salinas, Calif., to Pacific Coast Steel Corp., San Francisco.

225 tons, addition to school No. 11, Dongan Hills, Staten Island, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa.

225 tons, high school, New Orleans, to Virginia Bridge & Iron Co., Birmingham, Ala.

215 tons, school addition No. 123, Queens, N. Y., to Schacht & Sons, Bronx, N. Y.; Spencer, Forbes Inc., general contractor.

200 tons, 6-story stores and apartments, 152 West Forty-ninth street, New York, to D. & R. Iron Works, New York; David Lang, architect.

200 tons, apartment, West Forty-sixth street, Woodside, Queens, N. Y., to Holland Iron Works, Brooklyn, N. Y.; Cohn Bros., architects.

200 tons, apartment, Rockaway avenue and Winthrop street, Brooklyn, N. Y., to Pecker Iron Works, Brooklyn.

200 tons, foundry addition, Spring City

Awards Compared

	Tons
Awards this week	28,873
Awards last week	47,371
Awards two weeks ago	56,759
Awards this week in 1929	41,386
Av. weekly awards, 1930	35,928
Av. weekly awards, 1929	42,213
Av. weekly awards, Sept.	39,163
Tot. awards to date, 1929	1,844,447
Tot. awards to date, 1930	1,580,831

Foundry Co., Waukesha, Wis., to A. C. Woods & Co., Rockford, Ill.

190 tons, shapes and joists, state building, Cresson, Pa., to Berkebile Bros., Johnstown, Pa.

185 tons, apartment, Bronxville, N. Y., to Eschen & Obeler Iron Works, Bronx, N. Y.; J. M. Felson, architect.

150 tons, Elks' National home, Bedford, Va., to Virginia Bridge & Iron Co., Roanoke, Va.; D. J. Phipps, Roanoke, contractor.

150 tons, buildings, Kings Park hospital, Long Island, N. Y., to National Bridge Works, Long Island City, N. Y.

135 tons, building, Grove City college, Grove City, Pa., to Pittsburgh Bridge & Iron Works, Pittsburgh.

125 tons, buildings for du Pont interests, Wilmington, Del., to Belmont Iron Works, Philadelphia.

120 tons, bridge, Nickel Plate railroad, Athol Springs, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

103 tons, Valle Vista bridge, Hewett, Calif., to McClintic-Marshall Co., Los Angeles.

100 tons, shop improvements, Chesapeake & Ohio railroad, Clifton Forge, Va., to Dietrich Bros., Baltimore; also 12 tons concrete bars to same.

100 tons, Montgomery county highway bridge in Kentucky, to Virginia Bridge & Iron Co., Birmingham, Ala.

Contracts Pending

6000 tons, west end, North Side bridge, Pittsburgh; American Bridge Co., Pittsburgh, low bidder.

6000 tons, Western Hills viaduct, Cincinnati, O.; general contract to MacDougald Construction Co., Atlanta, Ga.

5500 tons, Kentucky state highway bridge over Ohio river, Henderson, Ky., to Evansville, Ind.; American Bridge Co., Pittsburgh, low bidder.

5000 tons, bridge in Lorain county, O.; contingent upon bond issue passing in fall election.

5000 tons, office building, house of representatives, Washington; bids closed Oct. 28.

5000 tons, Locust street subway, section 1, Philadelphia; bids Nov. 18.

3000 tons, Wendell Phillips high school, Forty-ninth and State streets, Chicago.

2600 tons, highway bridge at Henderson, Ky.

2500 tons, Pennsylvania avenue subway, contract No. 1, Philadelphia; bids Nov. 5.

2000 tons, hotel, Canadian National railways, Saskatoon, Sask.

1000 tons, gymnasium, Rutgers university, New Brunswick, N. J.

1000 tons, two schools, Nos. 24 and 150, Queens, N. Y.

800 tons, Federal Reserve bank building, Pittsburgh; general contract to Mellon-Stuart Co., Pittsburgh.

800 tons, John Marshall high school, Cleveland; action early in November.

600 tons, caissons for Western Hills viaduct, Cincinnati, O.

400 tons,, technical school, board of education, Fort William, Ont.

300 tons, building, House of Correction, Billerica, Mass.

300 tons, power house, Diablo dam site, Seattle; bids in November.

200 tons, school addition, Baltimore.

200 tons, city coliseum, Sterling, Ill.

175 tons, two bridges in Sauk county, Wis.; bids close Nov. 5.

150 tons, 150 x 450-foot building, Cortaulds Ltd., Cornwall, Ont.; general contract awarded Foundation Co. of Canada Ltd., Montreal, Que.

150 tons, $200,000 theater, Fox West Coast Co., Billings, Mont.; R. C. Reamer, Stimson building, Seattle, architect; bids received.

125 tons, plant addition, Century Electric Co., St. Louis.

125 tons, state bridge, Attleboro, Mass.

106 tons, post office, Pawtucket, R. I.

100 tons or more, Isthmus bridge, Marshfield, Oreg.; bids Nov. 5.

100 tons, post office, Fall River, Mass.

Unstated tonnage, two bridges from lake front stadium, Cleveland, over railroad tracks, one at West Third street and the other to the East of court house.

Unstated tonnage, 10-story office building to cost $15,000,000, Fisher Bros., Second boulevard, between Lothrop and Bethune avenues, Detroit; A. Kahr Inc., is preparing plans.

Unstated tonnage, $1,800,000 additions to filtration and bleaching plants, E. B. Eddy Co. Ltd., Hull, Que., bids soon.

Unstated tonnage, three or four Cuyahoga county bridges, Ohio to turn over $1,500,000 to county to share in expense.

Concrete Bars

Large Lettings Continue, Four Exceeding 1000 Tons Each—More in Prospect for Bridges, Sewers, Subways—Seasonal Letdown at Pittsburgh—Prices Holding

REINFORCING BAR PRICES, PAGE 71

Chicago—Numerous small inquiries are out. Awards and large tonnage inquiries are scarce. It is understood new prices for billet and rail steel reinforcing bars will be published soon. Six contracts out of 15 for paving and highway widening in Cook county, Ill., have been let, totaling 500 tons of reinforcing bars, but these probably will not be shipped until spring. Road programs are being closed. Iowa is carrying over 866 miles of improvement out of a 1025-mile program. Wisconsin road work closed Oct. 1, and Indiana has practically completed its schedule.

Boston—Concrete bar awards continue small, the aggregate for the past week being about 200 tons. Prices remain weak with sharp competition. General contract was placed on sewage disposal plant for Providence, R. I., and bids close this week on 300 tons of bars for it. A county institution at Billerica, Mass., will take 200 tons.

New York—Concrete reinforcing bars hold firm at 2.35c, delivered New York, cut lengths in car lots. Shading is less frequent. Fireproof Products Co. will furnish 190 tons for a shoe shop, Sing Sing prison, for Jones & Laughlin Steel Corp. Sewers in New Jersey and Westchester county, N. Y., take 850 tons or more. Subway and engineering projects call for liberal tonnages.

Pittsburgh—Seasonal influences curtail activity in concrete bars. New tonnage, off moderately from early October, includes 1000 tons for a Pittsburgh boulevard bridge and 550 tons for a Pennsylvania railroad grain elevator. Prices are unchanged.

Buffalo—Rust Engineering Co. has the general contract for the Pennsylvania railroad's new grain elevator at Erie, Pa. A 150-ton order for a prison is the largest reported this week by district fabricators.

Cleveland—In addition to 1100 tons of concrete bars for the Youngstown, O., filtration plant, Truscon Steel Co. was awarded 310 tons for the Higbee Co. department store here. The 330 tons required for the West Forty-first street bridge, Big 4 railroad, are being purchased in Cincinnati. Three schools are slated for early construction here, the first, John Marshall high school, will be let early in November. Concrete bars are quoted 1.60c to 1.65c, Cleveland.

Birmingham, Ala.—Conditions have improved in concrete bars and mills are busier.

Awards Compared

	Tons
Awards this week	11,278
Awards last week	8,140
Awards two weeks ago	8,027
Awards this week in 1929	3,341
Av. weekly awards, 1929	5,849
Av. weekly awards, 1930	7,105
Average weekly awards Sept.	7,104
Total awards to date, 1929	270,453
Tot. awards to date, 1930	312,724

Contracts Placed

1750 tons, square twisted steel rods, tunnel No. 2, Yonkers-Brooklyn route, board of water supply, New

(*Concluded on Page 79*)

Strip

Users Outside Automotive Line Support Market by Better Demand—Current Prices Hold

STRIP PRICES, PAGE 71

New York—While some sellers still are quoting 1.65c and 1.75c, Pittsburgh, on wide and narrow gage of hot strip, most business is going at $1 a ton lower. Cold-rolled strip is unchanged at 2.35c, Pittsburgh. Demand is insufficient for a test.

Philadelphia — Hot-rolled strip continues 1.60c, Pittsburgh, for 6 to 24 inches and 1.70c, Pittsburgh, below 6 inches. Attempts of some consumers to obtain a lower price apparently are unsuccessful. This grade over 24 inches is usually 1.80c, Pittsburgh, for heavy gages and 1.95c, Pittsburgh, for light gages, plus blue annealed extras. Cold-rolled strip is firm at 2.35c, Pittsburgh.

Pittsburgh—Strip tonnage is supported by demands of consumers other than automotive. Shipments to the latter this month are off from September tonnage but total October business is expected to show a small increase over that of the preceding month. Cold strip tonnage has improved during recent weeks and production of this material by some interests is heavier than that of hot strip. Radio manufacturers continue seasonally active. Prices are unchanged at 1.70c to 1.75c for narrow hot strip and 1.60c to 1.65c for wide material. Cold strip continues 2.35c to 2.45c. Mill operations are unchanged at 40 to 45 per cent.

Youngstown, O.—Some further broadening in demand for steel strip continues. Lines of manufacture other than automotive are coming to the use of strip, especially noticeable in narrow widths.

Cleveland—Some large strip steel users are bringing their shipping dates forward. Included are such companies as Fisher Body and Delco-Remy. As a rule, however, most consumers continue a hand-to-mouth and this creates unsatisfactory rolling schedules. In the main prices are holding at 2.35c, Cleveland, for cold and 1.60c and 1.70c, Pittsburgh, for wide and narrow hot respectively. An occasional concession is uncovered by the shopper who has large attractive tonnage to place.

Chicago—Hot-rolled strip is being quoted $1 off the recent market for all sizes. Inquiries are slightly more numerous but sales are lighter. Operations are 50 to 60 per cent. Cold-rolled mills have no backlogs, operating about 40 per cent.

Warehouse Buying Cautious as October Gains Slowly

Warehouse Prices, Page 93

New York—Jobbing demand is unchanged, with few signs of improvement. Some leading jobbers are doubtful if the October showing will be any better than for September. Prices are moderately steady.

Boston—Continued demand maintains warehouse business, largely in odd tonnages. These help maintenance of schedule prices.

Philadelphia—Such improvement as jobbers have enjoyed lately has not been maintained. Prices are unchanged at recently reduced levels.

Buffalo—General warehouse demand continues to run somewhat behind last year's averages. Fourth-quarter sales will show a higher percentage in comparison with those of last year than any other 90-day period of 1930.

Pittsburgh—Demand is steady but improvement over September tonnage is lacking. Sheets are receiving a better call for building repair purposes. Prices are unchanged except sheets, which are slightly easier.

Cleveland—Steel warehouses continue without change. Buying is in limited quantities only. Warehouse interests have little faith in the possibility of any substantial upturn in demand during the balance of the year. Prices are slightly less immune from shading.

Detroit—Business is better diversified from upstate and outlying regions. October sales better September's. Not much support is being lent by the motor producers locally.

Cincinnati—Cautious buying of light tonnage will hold warehouse volume this month to the level of September. Consuming demand is varied. Prices are unchanged.

Chicago—October warehouse sales will show gain over last month, but the pick-up in tonnage has been much lighter than had been expected. Sheet jobbing is only moderate. Orders continue small. A fair volume of hot-rolled bar products is moving from stock.

St. Louis—Despite the turn to cooler weather, highway municipal and public utility construction work continues active, and demand for iron and steel from stock for these operations is in good volume. There is also a better call for certain grades of tubular goods. Slight improvement in the call for wire goods is noted.

Operations' Valley Gain Offset in East, Cleveland

Youngstown, O.—Based on ingot and finished steel output, operations will be at 54 per cent capacity compared with 53 last week. Slight increases in sheet production advances operations for the first time in two months. Empire Steel Corp. resumes work at its Falcon sheet plant.

Philadelphia—Eastern ingot production is at 53 per cent of capacity, a decline from 58 last week. Plate mills operate at 50, sheet production is at 50 to 60 and shapes are 60 to 65.

Pittsburgh—Ingot production continues 50 to 55 per cent. Sheet schedules again are lower at 45 with tin plate also down at 50 to 55. Strip production continues 40 to 50 with pipe unchanged at 50.

Buffalo—District steelworks continue to operate this week at 57 per cent of capacity, but some units are said to be due for early curtailment. Two blooming mills are on double turn; all others are on single turn.

Cleveland—Ingot production has dropped to a low mark for 1930, with only eight of its 34 open hearths on. The rate, at 24 per cent, compares with 35 per cent last week and 45 two weeks ago.

Chicago—Ingot output remains at 57 to 58 per cent. Steelworks are piling pig iron. Finishing mill activity shows little change. Sheet operations are down a few points to about 50 per cent for the district.

Birmingham, Ala.—Steel mill operations are off again and estimate now is that 45 per cent of capacity is engaged. Delay of railroad business, including rail, accessories and cars brings about reduction. Nine open-hearth furnaces out of 23 are producing steel.

Business is now "holding its ground," the Southern Metal Trades association, Atlanta, Ga., reports. Business leaders are ready to respond, the association states, but "the public as a whole seems to be holding back; encouragement to co-operate is what it needs."

Concrete Awards

(*Concluded on Page 75*)

York, to Pittsburgh Steel & Bolt Corp., Pittsburgh; Patrick McGovern Inc., New York, general contractor.

1100 tons, filtration plant, Youngstown, O., to Truscon Steel Co., Youngstown.

1000 tons, Buffalo, assembly plant, Ford Motor Co., Detroit, to Truscon Steel Co., Youngstown, O.; A. Kahn Inc., Detroit, architect.

1000 tons, Ardmore boulevard bridge, Pittsburgh, to Fort Pitt Bridge Works Co., Pittsburgh.

650 tons, building, Globe-Democrat Publishing Co., St. Louis, to Laclede Steel Co., St. Louis.

600 tons, Pennsylvania railroad grain elevator, Erie, Pa., to Concrete Steel Co., New York; Rust Engineering Co.; Pittsburgh, general contractor.

600 tons, Textile Tower building, Seattle, to Pacific Coast Steel Corp., Seattle.

540 tons, United States assay office, South street, New York, to Carroll, McCreary & Co., New York; Great Lakes Construction Co., Chicago, general contractor.

450 tons, Mills building, San Francisco, to Gunn, Carle & Co., San Francisco.

310 tons, Higbee Co. department store, Cleveland terminal group, Cleveland, to Truscon Steel Co., Youngstown, O.; Lundoff-Bicknell Co., general contractor, Cleveland.

300 tons, mesh, Bailey avenue market terminal, Buffalo, to Wickwire Spencer Steel Co., Buffalo.

300 tons, Cook county, Ill., bridge work, to unstated fabricator.

275 tons, high school, Washington, Pa., to Concrete Steel Co., through Baker & Coombs, Morgantown, W. Va.; general contractors.

250 tons, barracks, Fort Wadsworth, Staten Island, N. Y. ,to Igoe Bros., Newark, N. J.; R. J. Murphy Co., contractor.

226 tons, culvert at Tucson, Ariz., to unstated interest.

211 tons, Chicago avenue bridge over Des Plaines river, near Chicago, to Inland Steel Co., Chicago, through Material Service Co.

200 tons, technical high school, Brooklyn, to Igoe Bros., Newark, N. J.; Fredburn Construction Co., general contractor.

200 tons, school, Twelfth street, Philadelphia, to American Steel Engineering Co., Philadelphia.

200 tons, tanks, Pacific Portland Cement Co., Redwood City, Calif., to Pacific Coast Steel Corp., San Francisco.

180 tons, buildings, Kings Park hospital, Long Island, N. Y., to Concrete Steel Co., New York; Freudlait Construction Co., contractor.

175 tons, 6-story addition, Queensboro Storage Co. warehouse, Jamaica, N. Y., to Jones & Laughlin Steel Corp., Pittsburgh; Turner Construction Co., contractor.

150 tons, prison cell block, Attica, N. Y., to Buffalo fabricator.

148 tons, state bridge, Tyrone, Ky., to Henry Bichell Co., Louisville, Ky.

140 tons, bridge on Flagstaff highway, Phoenix, Ariz., to unstated interest.

123 tons, substructure, state bridge, Spottsville, Ky., to Koss Construction Co., Des Moines, Iowa.

100 tons, foundations for building, New York Telegram Publishing Co., New York, to Concrete Steel Co., New York; George J. Atwell Foundation Corp., builder.

100 tons, shrine, Auriesville, N. Y., to McClintic-Marshall Co., Pittsburgh.

Contracts Pending

550 tons, two sewer projects, Westchester county, New York.

330 tons, West Forty-first street bridge, Cleveland, Big 4 railroad, Cincinnati; order to be placed from Cincinnati.

300 tons, intermediate reformatory, Algoa, Mo.; contract to be let by Missouri State Prison board, Jefferson City, Mo.

300 tons, sewage disposal plant, Providence, R. I.; general contract awarded; bids close this week.

300 tons, sewer, Plainfield, N. J.

200 tons, store, Goldberg Co., Lincoln avenue and Belmont street, Chicago; Leichenko & Esser, Chicago, architects.

200 tons, Howard street bridge, Spokane; Charles A. Power, Spokane, low bidder on general contract.

200 tons, county institution, Billerica, Mass.

100 tons or more, 260-foot span concrete bridge over Pudding river between Clackamas and Marion counties, Oregon; state highway commission opens bids Oct. 30.

100 tons or more, two concrete bridges, 50 and 76 foot spans respectively, bureau of highways, Boise, Idaho; bids opened Oct. 28.

Unstated tonnage, barracks for United States marines, Quantico, Va.; general contract to Ralph Sollitt Construction Co., Chicago.

Kellam & Monroe Foundry Co., High Point, N. C., recently has changed its name to the Kellam Foundry Co.

Effective Date Deferred on Revised Trade Practice

Washington—The federal trade commission has postponed the effective date of revised trade practice rules in various industries until Nov. 15. The date was to have been Oct. 25. Letters have been received from several industries asking that more time be granted for consideration of the proposed revisions. It is understood that about 100 trade practice rules are affected by the revisions.

Eaton Buys New Utility

Control of the United Light & Power Co., a public utility serving 800 communities in Ohio, Iowa, Nebraska, Indiana, Illinois, Tennessee, Missouri and Texas has been acquired by Continental Shares Inc., Cleveland, the Eaton-Otis investment trust, which is a substantial stockholder of Youngstown Sheet & Tube Co., Republic Steel Corp., Gulf States Co., Wheeling Steel Corp., and others.

F. Earl Landes, Brunnersville, Pa., has purchased the Brunnersville Iron Foundry formerly operated by Frank B. Bentz.

Pipe

Lettings Lower—Los Angeles Divides 2679 Tons—Seattle's 8600-Ton Award Is Near

PIPE PRICES, PAGE 93

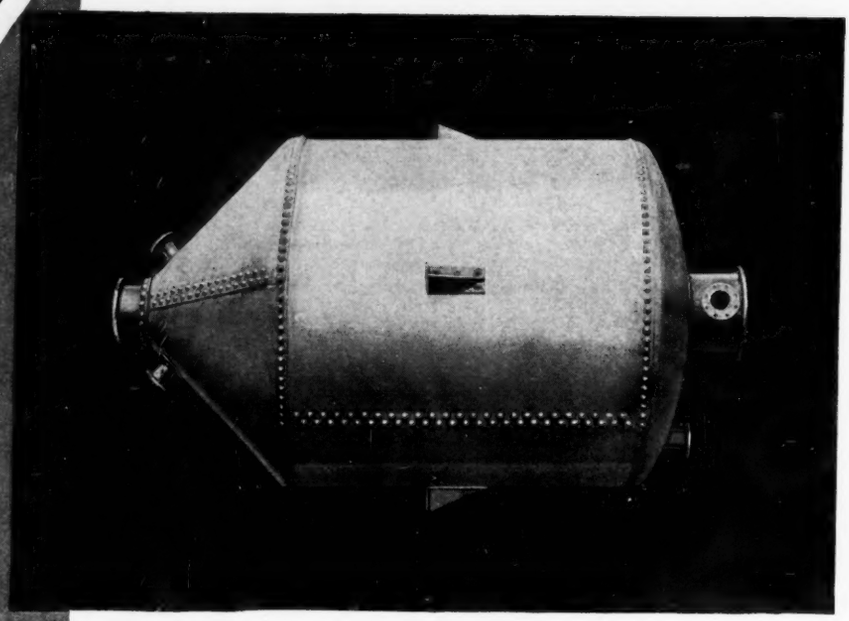
New York—Cast pipe buying is light. About 3000 tons of 16 and 24-inch is pending. Prices are unchanged and firm at $36 to $37, eastern foundry. Utilities are not expected in the market for several weeks. A fairly large tonnage is pending for Panama. Orders are largely confined to carload lots. Newton, N. J., will take additional tonnage for a sewage treatment plant.

Boston—Private cast pipe business continues in fairly good volume. Prices remain firm, $36, foundry. The 745 tons for Marblehead, Mass., will probably go to Warren Foundry & Pipe Co., which is low. Northampton, Mass., awarded 8000 lineal feet to United States Pipe & Foundry Co., while Donaldson Iron Co. took 400 tons from a Massachusetts consumer.

Pittsburgh—Tonnage of tubular products so far this month is off slightly from the comparable September period. Demand for oil country goods shows little change. Line pipe orders are few. Activity in locomotive and boiler tubes and mechanical tubing is quiet. Standard pipe demand remains seasonally light. Backlogs on large size lap-welded pipe are declining but are expected to be maintained until near the end of the year at which time prospective work, it is thought, will materialize. Prices remain fairly steady. Operations continue 50 per cent.

Cleveland—Jobbers still order one, two or three carloads of pipe at a time to maintain their stocks in orderly array. Pipe and conduit for the Higbee Co. department store building here is going to northern Ohio mills, 400 to 500 tons.

Chicago—Public lettings are slowing down rapidly, but a number of contract jobs are being pushed to completion. Prices for 6 to 24-inch are unchanged for contract work at $45.20 to $46.20, delivered Chicago. Lima, O., is taking bids on 300 tons of 6 and 8-inch cast pipe, and Co-



NITRO-COTTON DIGESTER

fabricated from ENDURO NIROSTA KA2

FOR the nitrating of cotton linters at high temperatures and pressures, this large manufacturer specified ENDURO NIROSTA KA2 plates and rivets for the construction of the digester illustrated.

This swing toward ENDURO has gone far in the chemical industries for fabricating numerous equipment used in manufacturing and handling highly corrosive acids, because ENDURO is processed according to patented Krupp specifications. This processing gives ENDURO far greater resistance to corrosion, as well as improved mechanical properties which are not obtainable in other comparable alloys.

For all such problems, why not investigate the possibility of lowering your costs by the use of this improved alloy? Republic engineers will be glad to work with you toward that end.

Central Alloy Steel Division

REPUBLIC STEEL
CORPORATION
Massillon, Ohio

ENDURO NIROSTA KA2

lumbus, O., has 500 tons of 8-inch pending.

Birmingham, Ala.—Cast pipe production has eased off further. Shipments remain steady. Base prices are unchanged. Backlogs are nearly dissipated and new business comes in slowly.

Contracts Placed

2679 tons class 150 cast pipe for Los Angeles, allocated as follows: 381 tons, 6-inch, to Pacific States Cast Iron Pipe Co., San Francisco; 381 tons 6-inch, to National Cast Iron Pipe Co., Birmingham, Ala.; 931 tons, 6 and 8-inch to American Cast Iron Pipe Co., Birmingham; and 986 tons, 6, 8 and 12-inch, to United States Pipe & Foundry Co., East Burlington, N. J.

400 tons, 4 to 16-inch cast pipe for Massachusetts consumer, to Donaldson Iron Co., Emaus, Pa.

331 tons, 6 to 12-inch class 150 cast pipe for Fullerton, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.

105 tons, 24-inch cast pipe, for District of Columbia, to Lynchburg Foundry Co., Lynchburg, Va.; bid $38.50 a ton.

Unstated tonnage, 8000 lineal feet, 6-inch cast pipe for Northampton, Mass., to United States Pipe & Foundry Co., East Burlington, N. J.

Steel Pipe Placed

Unstated tonnage, 5550 feet, 2-inch galvanized water pipe, department of commerce, lighthouse service, to Eastern Iron & Metal Co., Salt Lake City, Utah.

Contracts Pending

745 tons, mostly 16-inch cast pipe for Marblehead, Mass.; Warren Foundry & Pipe Co., Phillipsburg, N. J., low bidder.

300 tons, 6 and 8-inch cast pipe for Lima, O.; bids Oct. 27.

Steel Pipe Pending

62,000 tons, line in Montana projected by Montana Power Co.

8600 tons, steel pipe line, Seattle, to Western Pipe & Steel Co., San Francisco; formal award delayed by litigation; Queen City Construction Co., general contractor.

Refractory Demand Slow As Steel Plant Work Ends

Refractories Prices, Page 82

Pittsburgh—Refractory business is at the lowest level of the year with October sales falling below those of several preceding months. New construction work in the steel industry requiring refractory brick is light, and repair work reflects quiet in iron and steel operations. Relining of blast furnaces and stoves has been fairly active this year but most contemplated work is completed and little new business is appearing. Prices are unchanged and fairly steady, with first quality fire clay and silica brick at $43, magnesite brick, $1.65.

Wire

Lessened Buying Prevents Increase in Production—Late Season Limits Country Buying

WIRE PRICES, PAGE 71

Chicago—Western wire mills expect October specifications and shipments to approximate those of September, but little gain is likely. A shade less buying of common wire products from farm districts has resulted owing to lateness of the season. Dealer sales have dropped off sharply, while jobber specifications for common products are relatively heavier. Recent weakness in copper quotations have depressed steel electrical wire for farm power lines. Plain wire is 2.35c Chicago or western mills.

Worcester, Mass.—Prediction that automobile production will improve within a few weeks has given a stimulous to the wire market that is being closely watched. Otherwise, production and demand are dull. Prices for plain bright wire to dealers are holding firm at 2.40c, base, Worcester.

New York—Nails are $1.90 to $2, Pittsburgh, with demand quiet. Plain bright wire is 2.30c, Pittsburgh.

Pittsburgh—Wire tonnage is lagging from the early October rate. Demand for manufacturers' wire has moderated slighily in some directions while business in jobbers products remains fairly steady. Automotive requirements are lighter than a month ago. Prices are quotably unchanged but some irregularity still exists in certain districts. Wire nails usually are $2 per keg, with plain wire 2.30c and wire rods $36.

Cleveland—Wire and wire nail orders are few and small. Jobber needs are easily satisfied since their turnover is below normal. Users of wire specify spasmodically as needed, including nut, bolt, rivet and screw factories and spring makers. Automotive demand continues limited. Manufacturers' wire continues 2.30c, Cleveland. Wire nails are $1.90 to $2.00, Cleveland.

Bolt, Nut, Rivet Demand And Specifications Light

Bolts, Nuts, Rivets, Prices, Page 71

Pittsburgh—Bolt, nut, and rivet specifications continue light with October tonnage slightly smaller than that of September. Requirements of railroads fail to expand but demand from fabricators still is in fair volume. Jobbers continue light buyers. Prices are 73 off for bolts and nuts, and 2.75c, Pittsburgh, for large rivets.

Philadelphia—Buying of bolts, nuts and rivets by the Reading railroad is expected. Otherwise the market is uneventful, with rivet demand especially poor.

Cleveland—While rivet business is almost at the irreducible minimum, fair ordering continues in nuts and bolts. National Screw & Mfg. Co., Cleveland, recently booked an attractive order from the Syracuse Washington Machine Corp., Syracuse, N. Y. Prices are unchanged.

Chicago—October specifications are a trifle better than September. It is indicated several implement works will go on heavier schedules in November. Nut and bolt discounts are unchanged at 64 to 73 off.

Semifinished Tonnage Better Than in September

Semifinished Prices, Page 82

Pittsburgh—Occasional small lots of semifinished steel are sufficient to give October tonnage a slight increase over that of September but inquiry for future needs still is limited. One for 2000 tons of forging billets is the largest active item. Prices are receiving little test.

Philadelphia—Billet specifications in this district are somewhat smaller, but prices are unchanged.

Youngstown, O.—Open-hearth operations are around 46 per cent, against 48 per cent two weeks ago. Purchases of semifinished steel continue infrequent, buyers seeking almost immediate shipment. Billets, sheet bars and slabs bring $31, Youngstown and Pittsburgh.

Cleveland—The leading local merchant producer of sheet bars, billets and slabs, has specifications in hand for about seven days and contemplates starting another open hearth. It now is operating four of its 14 units. The market shows little change.

Chicago—Semifinished shipments are quiet. Some stocks of sheet bars have been built up, but otherwise no semifinished accumulations have resulted. Prices are nominal on the basis of $31 for small billets, blooms and sheet bars. Forging billets are $37, base, Chicago.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$17.50
Pittsburgh, district fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley, furnace	17.00
Cleveland fur., local del.	17.50
Philadelphia, delivered	18.76 to 19.76
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.50
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail, Brooklyn	20.41 to 20.91
Buff., all-rail, Newark	18.78 to 19.28
Ala., Bir. fur., local del.	14.00
Alabama, del. Chicago	17.01 to 18.01
Alabama, del. St. Louis	16.42
Alabama, del. Cincinnati	15.19 to 16.19
Alabama, del. Cleveland	18.01
Ala., Phila., dock del.	16.75 to 17.25
Ala., Balt., dock del.	16.50 to 17.00
Alabama, New York dock	16.50
Ala., Boston dock del.	17.25
Tenn., Bir. base, local del.	14.00
Tennessee, del. Cin.	15.19 to 16.69
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	18.00
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	19.28 to 19.78
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	19.26 to 20.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	19.00
Eastern, del. Phila.	19.76 to 20.76

MALLEABLE

Chicago, furnace	17.50
Cleveland fur., local del.	17.50
Pittsburgh district fur.	18.00
Pittsburgh, delivered	18.63 to 19.13
Valley furnace	17.50
Buffalo fur., local del.	18.00
Eastern Penna., delivered	19.26 to 20.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Eastern Penn., del.	17.50 to 18.00
Buffalo fur., local del.	17.00
Montreal, delivered	22.50
Valley furnace	17.00

BESSEMER

Valley furnace	17.50
Pittsburgh, delivered	18.63 to 19.13
Pittsburgh, furnace	18.00

LOW PHOS

Valley fur., standard	27.00
Philadelphia, standard	24.76 to 28.79
Furnace, copper-bearing	23.00 to 23.50

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chicago	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$33; 16—$35.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6 00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell. basis.	5.50
Portsmouth, O., ovens, Connell. basis	5.50
Buffalo ovens	8.00 to 8.50
Detroit, ovens	8.50
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross Ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	11.00
North African low phosphorus	10.50
Swedish basic, 65%	9.50
Swedish low phos.	11.00
Spanish, North African basic, 50 to 60%	9.50
Newfoundland fdy., 55%	9.00
Tungsten, spot and future short ton unit, duty paid	$12.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.50

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	27 to 28 cents
Indian, 48-50%	27 to 28 cents
Brazilian, 46-48%	25 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$43 00
Georgia, Alabama	40.00 to 47.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00 to 38.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham, Ala.	50.00 to 51.00

MAGNESITE BRICK

Pet net ton

9 x 4½ x 2½	65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$31.00
Pittsburgh, bessemer	31.00
Youngstown	31.00
Cleveland	31.00
Philadelphia	36.30
Chicago	32.00
Forging, Chicago	37.00
Forging, Pittsburgh	36.00
Forgings, Philadelphia	41.30

SHEET BARS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00
Chicago	32.00

SLABS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00

WIRE RODS

Pittsburgh, Cleveland	$36.00
Chicago	37.00

SKELP

All grades, Pittsburgh	1.60c to 1.70c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$99.00
*Ferromanganese, del. Pittsburgh	103.79
Spiegeleisen, 19-21%, domestic fur. spot†	33.00
*Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.15
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do, one ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$17.25
Washed gravel, import duty paid east, tide, gross ton	19.50

STEEL BARREL AND DRUM STOCK

Barrels and drums made from Sharon Sheets give lasting and trouble free service.

Sharon Sheets can be welded readily, giving a strong, tight, solidly closed weld. They are chemically pure and free from foreign matter, making them ideal for welding.

You can benefit by using SHARON SHEETS if you use welding as a means of fabrication. They offer economic advantages to you because of their rapidity in welding and ease in fabrication.

Save with Steel

SHARON STEEL HOOP COMPANY

SHARON ▲▼▲▼▲▼▲▼▲▼ PENNSYLVANIA

Pig Iron

Market Is Quieter—October Shipments Below September's —Prices Appear More Stable

PIG IRON PRICES, PAGE 82

Pittsburgh—Slightly better releases for pig iron are noted. New business shows little improvement since a month ago but October shipments show a moderate gain over September. Orders still are limited to small lots, the recent price reductions exerting little influence on forward buying. Inquiry is quiet. Prices are holding fairly well at $17.50, base, valley, for bessemer and malleable, despite occasional reports of less. No. 2 foundry usually is $17, valley, with basic quoted nominally at the same level.

Boston—While pig iron sales in the New England district did not exceed 1500 tons in the past week, a firmer price situation became apparent. Some Buffalo furnaces have obtained 50 cents a ton more for their iron than the prices applying a week ago.

New York—Dullness prevails in pig iron, the week's sales aggregating 4000 tons. Buffalo iron is unchanged at $15.50 to $16, base, furnace, while southern iron is easier at $16.50, delivered New York docks. The navy has closed on approximately 800 tons for several of its yards. Bids will be taken Nov. 14 on 100 tons for the Panama canal zone.

Philadelphia—Sales of pig iron are restricted to numerous small and moderate size tonnages for quick shipment. Prices are unchanged. The bureau of supplies and accounts has opened bids on about 300 tons of various grades of pig iron for the Cavite naval station, Philippine islands.

Buffalo—It is reported that if pig iron demand does not improve in the immediate future one or two of the six blast furnaces now in operation here may be banked. Iron has been piling up throughout the year. While sellers deny shading $16 in the East, it is thought possible that a large inquiry would bring out a slightly lower price, and that full silicon differentials are not being obtained on some orders. The new $17.50, base, for the Buffalo district is firm.

Cleveland—Reduced production of pig iron, sellers believe, will have a beneficial effect on the market. Only three of the six stacks associated with steelworks, but selling iron in the merchant market, are in blast here. While the steelworks are not drawing heavily on their own sources of supply less disposition is noted to search for orders for pig iron in distant districts necessitating sharp price concessions, such as $15.50 to $15.75, base, furnace, as noted a week ago. The price for local delivery is held at $17.50, base. A small lot was sold to a consumer east of Pittsburgh, in western Pennsylvania, indicating a firmer price tendency at Pittsburgh. Inquiry is lacking. Westinghouse Electric & Mfg. Co. has not closed for Cleveland requirements. A Muncie, Ind., melter is understood to have divided an order for around 3000 tons of malleable. Lake furnaces with headquarters in Cleveland booked 11,000 tons in the past week, compared with 16,500 tons in the week preceding. The aggregate of sales and shipments are below those of September.

Youngstown, O.—The Hubbard furnace of the Youngstown Sheet & Tube Co., which had been banked while the mold foundry was down, has resumed blast, but one Campbell stack of the company has been blown out. Tonnage sales still are lacking. No. 2 foundry and malleable bring $17 and $17.50, respectively.

Cincinnati—Despite close buying of pig iron, unless shipments to smelters improve, part of some orders already booked will go to fill first quarter needs. New business during the past week reached a total of 2200 tons. An Indiana melter is to place 500 tons this week.

Chicago—Sales of pig iron have improved slightly but inquiries are lacking and only moderate interest is noted in iron for first quarter. Several thousand tons of foundry iron for that period is on inquiry or is being negotiated. Shipments from furnaces in October are less than those in September. A Milwaukee district melter purchased 2000 to 2500 tons of the base grade of foundry iron from a southern maker, at a delivered price reported to be about $1 under northern iron delivered. Most of the low priced iron is being consumed. The Chicago base furnace price is steady at $17.50. Merchant consumption is expected to gain next month with a pick up in schedules of several implement makers.

St. Louis—A number of stove foundries have requested larger shipments of pig iron and sales have improved moderately. Less iron is being offered at the recent low levels, and one southern producer is reported contemplating the withdrawal of offers at $11.50, base. The leading local producer is holding firmly to $17.50.

Birmingham, Ala.—Orders for pig iron continue limited to small lots. A little tonnage is being sold in the East and Middle West. Prices are unchanged.

Toronto, Ont.—Melters show little interest in the market for future delivery, current sales being limited to small, prompt lots.

Spiegeleisen Shipments More Active in East

Ferroalloy Prices, Page 82

New York—Specifications for domestic spiegeleisen are more active. Prices are $33 on 19 to 21 per cent domestic material, subject to differentials for quantities. The movement in ferromanganese remains unchanged with the market steady at $99, duty paid, for carloads to 500 tons annually.

Shipments of ferrochrome and nickel continue good. The movement of other ferroalloys outside of the manganese group have changed little. Relatively good business in high-grade alloy steels has helped some of the alloys. Tungsten is quiet and unchanged.

Pittsburgh—Shipments of ferroalloys are barely equal to those of a month ago. Specifications for ferromanganese and spiegeleisen follow closely the rate of steelmaking operations and demand for other ferroalloys reflects general industrial quietness. Ferrotungsten remains in a quiet market at $1.10 to $1.15 but is untested on large lots. Small tonnages of ferromanganese continue $103.79, delivered, with spiegeleisen $33, furnace.

Engineers Hear Materials Handling Address

An address, "Material Handling in the Foundry," was presented by E. E. Bennington, manager, Cleveland Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O., before a joint meeting of Newark Foundrymen's association and the metropolitan section of the American Society of Mechanical Engineers, Oct. 22, in Newark, N. J. Another feature was an address entitled "Casting the Largest Pipes That Have Ever Been Made," by John Tirrell, general foreman, Warren Foundry & Pipe Co., Phillipsburg, N. J.

Scrap

Further Declines Bring Lower Levels, but Tonnage Buying Is Being Done—Prices Are Weak

Chicago — Unsettled consumer prices for iron and steel scrap, and the caution of dealers in quoting buying prices make the market nominal for a number of grades. Sharp recessions, reaching to $1 a ton for several items, again have resulted. Views are that distress offerings may appear on tracks soon as brokers have nearly completed liquidation of orders, and scrap purchased on the long side of the market likely will come out shortly. It is indicated that specialties may be affected later even more than in the last few weeks. One large yard dealer is said to be out of the heavy melting steel market, and has turned down offerings at $11. Rock Island and Burlington have sold light lists, while Santa Fe released more than

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham	10.50 to 11.50
Boston, dealers	7.75 to 8.10
Buffalo, No. 1	12.00 to 12.50
Buffalo, No. 2	11.00 to 11.50
Chicago	11.00 to 11.50
Cinci., deal.	10.25 to 10.75
Cleve., No. 1	11.00 to 11.25
Cleve., No. 2	10.25 to 10.50
Det., No. 1 deal	10.50 to 11.00
Det., No. 2 deal	9.25 to 9.75
E. Pa. del. mill	11.50 to 12.50
N. Y. del. R. R.	8.50 to 9.00
N. Y. deal. No. 2	6.25 to 6.50
N. Y., deal. yd.	6.00 to 6.50
Pitts. No. 1	14.25 to 14.75
St. L. No. 1 sel	11.00 to 11.50
Federal, Ill.	10.00 to 10.50
Granite C., Ill.	9.50 to 10.00
Valleys No. 1	14.50 to 15.00

COMPRESSED SHEETS

Buffalo, dealers	10.50 to 11.00
Chicago	9.25 to 9.75
Cleveland	10.50 to 10.75
Detroit, dealers	10.50 to 11.00
E. Pa. new mat	10.50 to 11.50
Pittsburgh	14.00 to 14.50
Valleys	14.00 to 14.50

BUNDLED SHEETS

Buffalo	8.00 to 8.50
Cinci., deal.	9.25 to 9.75
Cleveland	8.00 to 8.50
Eastern Pa.	9.50
Pittsburgh	12.50 to 13.00
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	6.50 to 7.00
Cincinnati	7.25 to 7.75
Detroit, dealers	7.50 to 8.00
St. Louis	5.50 to 6.00

STEEL RAILS SHORT

Birmingham	12.00 to 12.50
Boston, dealers	6.85 to 8.10
Buffalo	15.00 to 15.50
Chicago (3 ft.)	13.00 to 13.50
Chicago (2 ft.)	13.50 to 14.00
Cinci., deal.	15.75 to 16.25
Detroit, deal.	14.50 to 15.00
Pitts. (open-hearth, 3 ft. and less)	16.00 to 16.50
St. Louis	14.50 to 15.00

STOVE PLATE

Birmingham	8.50 to 9.50
Boston, con.	8.00 to 8.50
Buffalo	9.75 to 10.25
Chicago, net	7.50 to 8.00
Cinci., deal. net	5.75 to 6.25
Det., net, deal	7.00 to 7.50
Eastern Pa.	9.50
N. Y., deal. mill	6.00
St. Louis	8.50 to 9.00

COUPLERS, SPRINGS

Buffalo	14.50 to 15.00
Chicago	12.50 to 13.00
Eastern Pa.	16.00 to 17.00
Pittsburgh	16.50 to 17.00
St. Louis	12.50 to 13.00

ANGLE BARS—STEEL

Chicago	13.00 to 13.50
St. Louis	10.50 to 11.00

LOW PHOSPHORUS

Buf., billets and bloom crops	16.50 to 17.00
Cleveland bil. and bloom crops	17.50
Eastern Pa.	17.50 to 18.00
Pittsburgh bloom crops	19.00 to 20.00
Pitts. sheet bar crops	17.50 to 18.00

FROGS, SWITCHES

Chicago	12.00 to 12.50
St. Louis	11.50 to 12.00

SHOVELING STEEL

Chicago	11.00 to 11.50
Cleveland	7.50 to 8.00
St. Louis	10.50 to 11.00

RAILROAD WROUGHT

Birmingham	9.50 to 10.00
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	9.00 to 9.50
Buffalo, No. 2	12.50 to 13.00
Chicago, No. 1	10.25 to 10.70
Chicago, No. 2	11.00 to 11.50
Cinci., No. 2	10.25 to 10.75
Eastern Pa.	14.00 to 14.50
N. Y., No. 1 deal	10.00 to 10.50
Pitts., No. 2	14.00 to 14.50
St. Louis, No. 1	8.50 to 9.00
St. Louis, No. 2	10.00 to 10.50

SPECIFICATION PIPE

Boston	7.00 to 7.25
Eastern Pa.	12.00 to 12.50
N. Y., deal.	7.25 to 7.50

BUSHELING

Buffalo, No. 1	10.50 to 11.00
Chicago, No. 1	8.50 to 9.00
Cinn., No. 1 dl	8.50 to 9.00
Cinn., No. 2	6.00 to 6.50
Cleve., No. 2	7.00 to 7.25
Detroit, No. 1 new deal	9.00 to 9.50
St. L. No. 1	8.00 to 8.50
Val. new No. 1	13.50 to 14.00

MACHINE TURNINGS

Birmingham	7.50 to 8.00
Boston, dealers	3.35 to 3.50
Buffalo	8.00 to 8.75
Chicago	5.00 to 5.50
Cinn., deal	6.25 to 6.75
Cleveland	6.00 to 6.25
Detroit	4.00 to 4.50
Eastern Pa.	7.50 to 9.00
N. Y., deal	4.25 to 4.75
Pittsburgh	7.00 to 7.50
St. Louis	4.00 to 4.50
Valleys	9.50 to 10.00

BORINGS AND TURNINGS
For Blast Furnace Use

Boston	2.75 to 3.00
Buffalo	8.50 to 9.00
Cinn., deal.	6.00 to 6.50
Cleveland	7.50 to 7.75
Detroit, deal.	4.75 to 5.25
Eastern Pa.	7.00 to 8.50
N. Y., deal.	4.00
Pittsburgh	8.00 to 8.50

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	7.50 to 8.00
Boston, chem.	9.00 to 9.50
Boston, deal.	3.25 to 3.75
Buffalo	8.50 to 9.00
Chicago	5.50 to 6.00
Cinn., deal.	6.50 to 7.00
Cleveland	7.50 to 7.75
Detroit, deal.	4.75 to 5.50
Eastern Pa.	8.50
E. Pa. chem.	14.00 to 14.50
N. Y., deal.	4.50
Pittsburgh	8.00 to 8.50
St. Louis	6.50 to 7.00

PIPE AND FLUES

Cinn., deal	8.00 to 8.50

RAILROAD GRATE BARS

Buffalo	8.00 to 8.50
Chicago, net	7.50 to 8.00
Cincinnati	7.00 to 7.50
Eastern Pa.	9.50 to 10.00
N. Y., deal.	6.00
St. Louis	9.00 to 9.50

FORGE FLASHINGS

Boston, deal.	6.00 to 7.00
Buffalo	10.50 to 11.00
Cleve. ov. 10 in.	10.00 to 10.50
Detroit	9.25 to 9.75

FORGE SCRAP

Boston, deal.	5.50 to 6.00
Chicago	14.00 to 14.50
Eastern Pa.	11.00 to 11.50

ARCH BARS, TRANSOMS

Chicago, net	12.00 to 12.50
St. Louis	12.00 to 12.50

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	11.00 to 11.50
Chi., steelworks	6.50 to 7.00
Cleveland	11.00 to 11.50
Eastern Pa.	11.50 to 12.00
Pittsburgh	12.50 to 13.00
St. Louis	9.00 to 9.50

STEEL CAR AXLES

Birmingham	14.00 to 15.50
Bos., ship. pt.	16.50 to 17.00
Buffalo	16.00 to 16.50
Chicago	16.25 to 16.80
Eastern Pa.	20.50 to 21.00
St. Louis	15.00 to 15.50

SHAFTING

Bos., ship. pt.	13.00 to 13.50
Chicago	15.10 to 15.70
Chicago	14.00 to 14.55
N. Y., deal.	13.00 to 14.00
St. Louis	13.00 to 13.50

CAR WHEELS

Birming., iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.50 to 14.00
Buffalo, steel	14.50 to 15.00
Chicago, iron	12.50 to 13.00
Chi., roll steel	14.50 to 15.00
Cincinnati	12.00 to 12.50
Pitts., iron	14.00 to 14.50
Pitts., steel	16.50 to 17.00
St. Louis iron	11.00 to 11.50
St. Louis steel	14.00 to 14.50
E. Pa. steel	16.75 to 17.00
E. Pa. iron	14.50 to 15.00

NO. 1 CAST SCRAP

Birming., cup.	10.00 to 11.00
Buffalo (mac.)	11.00 to 11.50
Boston, textile	11.00 to 11.50
Chicago, mach.	11.75 to 12.30
Chi., railroad	10.15 to 10.65
Chicago, agri.	9.80 to 10.35
Cinn., mach. cup., gross	14.50 to 15.50
Cleve. cupola	13.50 to 14.00
Det., net deal	8.50 to 9.00
E. Pa. cupola	13.50
N. Y. cup. deal	8.50 to 9.00
N. Y., del. local foundries	14.00
Pitts., cupola	13.00 to 13.50
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 ma	10.75 to 11.25
St. L. No. 1	10.00 to 10.50

HEAVY CAST

Boston	10.50 to 11.00
Bos. Mach. cast	12.50 to 13.50
Buffalo, break	8.00 to 8.50
Cleve., break	8.00 to 8.50
Detroit, auto, net deal	10.50 to 11.00
Det., break., dl.	7.00 to 7.50
Eastern Pa.	11.00 to 11.50
N. Y. No. 1 dl.	7.00 to 8.00
N. Y. break. dl.	7.00 to 7.50
Pittsburgh	9.50 to 10.00

MALLEABLE

Boston R. R.	14.00 to 14.50
Buffalo	14.50 to 15.00
Chicago, agri.	11.50 to 12.00
Chicago, R. R.	13.00 to 13.50
Cinn., R. R. dl.	12.50 to 13.00
Cinn., agri., dl.	12.50 to 13.00
Cleve., rail	13.50 to 14.00
Det. auto deal.	12.50 to 13.00
St. Louis, rail	10.00 to 10.50

RAILS FOR ROLLING
5 feet and over

Birming., cup.	12.50 to 13.00
Boston	10.00 to 10.25
Buffalo	11.00 to 12.00
Chicago	13.50 to 14.00
Eastern Pa.	13.50 to 14.00
New York	9.50 to 10.00
St. Louis	12.50 to 13.00

LOCOMOTIVE TIRES

Chicago, cut	14.00 to 14.50
St. L. No. 1	12.00 to 12.50

LOW PHOS. PUNCHINGS

Chicago	12.50 to 13.00
Pittsburgh	16.00 to 16.50
Eastern Pa.	16.00 to 17.00
Buffalo	16.00 to 16.50

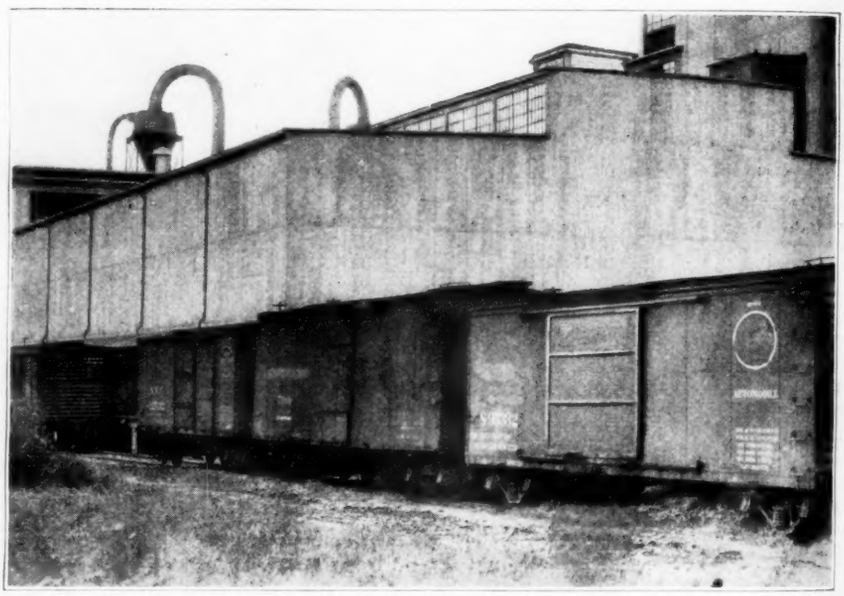
ARMCO
INGOT IRON
Sheets and Plates
provide *low-cost* service

WHERE sheet or plate equipment must be rust-resisting, serviceable; where upkeep must be lowered and profits conserved — there Armco INGOT IRON will give you the same low-cost-per-year performance it has given in culverts and other engineering structures.

Time tested and proved in more than two decades, this durable pure iron has the longest record of actual service of any low-cost, rust-resisting sheets and plates.

Such durability will save money for you, too. The office nearest you can tell you where, and how.

Write for the services of an Armco Engineer, who will study your problems and recommend the grade, gage or finish most economical for your requirements.



One of the Purina Mills—in Kansas City, Missouri—the Alfalfa House of which is sided with galvanized corrugated Armco INGOT IRON, for long-time, weather protection. Erected by the Jones Hettelsater Construction Company.

TUNE IN—The famous Armco Concert Band
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THE AMERICAN ROLLING MILL CO.
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ARMCO

Back of this familiar symbol is nearly thirty years' experience in the manufacture of special analysis iron and steel sheets and plates. When you want a rust-resisting, low-cost metal be sure to see this triangle and the words, "Armco INGOT IRON." It is your assurance of dependable, economical service.

"BE SURE IT'S MADE OF ARMCO INGOT IRON"

1000 tons of heavy melting steel, which was bid by dealers at $11.10, gross, Chicago. Melters are turning down scrap at bargain prices and interest is lagging for futures. Continued slow foundry operations and heavy scrap inventories of several larger melters are contributing to renewed short selling and a general depressed view.

New York—Further weakness has developed in scrap, local dealers reducing buying prices on several grades. No. 1 railroad steel is now holding at $8.35 to $9, New York, compared with $8.50 to $9.50, previously. This follows a reduction on material for eastern Pennsylvania and cessation of barge shipments to Buffalo. Other revisions are noted in No. 1 machinery cast, now holding at $8.50 to $9, New York; grate bars, $6; mixed borings and turnings, $4; and turnings, $4.25 to $4.75.

Boston—Weakness of steel and iron scrap prices in outside markets has had its effect here. Buying of axles by a New England consumer furnishes almost the only activity. Chemical borings are holding their price better than most grades, the supply being limited.

Philadelphia—An eastern Pennsylvania plant has bought 5000 tons of No. 1 heavy melting steel at $11.50, delivered, and more could have been had at this figure. A good sized tonnage of blast furnace borings and turnings brought $7, delivered, eastern Pennsylvania. Other buying has been in small and moderate tonnages.

Pittsburgh—Scrap continues weak. Heavy melting steel is off another 25 cents at $14.50, but is easy at this level lacking test due to light mill purchases. The leading consumer still is out of the market. Demand for other grades is dull. Cast scrap is quotably lower.

Buffalo—Two lots of heavy melting steel have been sold to Bethlehem for delivery at Lackawanna, the total being about 10,000 tons. Prices paid were $12.50 for No. 1 and $11 for No. 2 and acceptable substitutes. In each case this is a reduction of 50 cents a ton from former contract prices. All other materials are moving in small quantities.

Youngstown, O.—Iron and steel scrap consumers have further reduced shipments despite a slightly more active steelmaking pace. Brokers report No. 1 heavy melting steel is readily obtainable at $13.50 to $14. Consumers are able to buy this grade at $14.50 in small lots, but it is likely that not less than $15 could be done for tonnage.

Cleveland—Shipments have been suspended by the one consumer of iron and steel scrap which has been taking material. Shipments to the Valley district have also been reduced. As a result, activity is at the lowest ebb in several years. Dealer stocks are heavy.

Detroit—Market is generally weak and volumes low. Blast furnace grades are soft. Motor plant production of scrap is still restricted. Movement of scrap by boat from this district nears a close.

Cincinnati—Another mill has ordered shipments of iron and steel scrap resumed on contracts but in restricted volume. This has had little effect so far and the market continues dull. Quotations on No. 1 busheling are off 25 cents, at $8.50 to $9. Heavy melting steel remains at $10.75 to $11.25 with a Norfolk & Western railroad scrap list, closing this week, expected to provide a test for this price.

St. Louis—Generally slack demand continues for steel and iron scrap. Melters are taking only enough for immediate needs, which are small. Prices tend downward, with reductions of 25 cents to $2 per ton. Heavy melting steel and steel specialties are lower, and machine shop turnings and bundled sheets are sharply reduced.

Birmingham, Ala.—Little activity is shown in the steel and iron scrap market. Heavy melting steel is quoted close to $11, but melters are taking only current needs. Quotations in general are nominal in absence of trading.

Toronto, Ont.—Trading in steel and iron scrap is at a standstill. Mills are taking small quantities of heavy melting steel, but there is no demand for turnings. Iron scrap sales have shown some impromement. Most demand, however, is for machinery cast. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Coke

Market for Heating Fuel More Active—Furnaces Not Buying —Foundry Shipments Reduced

COKE PRICES, PAGE 82

Pittsburgh—Beehive coke demand is expanding slowly, unaided by tonnages for blast furnaces. Domestic and industrial heating fuel is moving fairly well, but by-product interests are taking the major portion of such business. Requirements of furnace coke for gas producers continue seasonally light. Foundry coke demand is smaller than a month ago. Prices of all grades are steady. Beehive coke production in the Connellsville district for the week ended Oct. 18 was 18,050 tons, against 18,750 tons the preceding week, and 57,360 tons in the week a year ago, according to the *Connellsville Courier*.

New York—Beehive furnace coke is slightly more active, with prices unchanged at $2.50 to $2.65, Connellsville. Beehive foundry coke demand shows little change, standard grades being unchanged at $3.50 to $3.75, Connellsville, and premium brands $4.70 to $4.85. By-product foundry coke is $9 to $9.40, Newark; $11, New England, and $9, Philadelphia.

Cincinnati—Little change is noted in demand for by-product foundry coke. Shipments fail to show improvement. Prices are stationary at $9, delivered Cincinnati.

St. Louis—The coke market shows the effect of increased domestic requirements. Specifying by foundries still is slow. Shipments to foundries in the West and Southwest, however, have gained slightly. Prices are steady.

Boston—Foundries continue to buy coke on a hand-to-mouth basis, while demand for heating fuel has improved slightly.

Birmingham, Ala.—Coke shipments continue at their recent rate, independent producers keeping production well in check.

Pacific Coast

Heavy Steel Pipe Tonnage Near Award—Montana Pipe Line to Yield 50,000 Tons of Plates—Prospective Needs of Structurals Close to 50,000 Tons—Awards Being Closed Slowly

Seattle—Steel awards in the Pacific Northwest this week approximated 2500 tons. While no important projects, involving steel, have developed recently, several large contracts are pending.

Litigation has prevented formal award of 8600 tons of plates for pipe lines at Seattle. In case court action fails the Queen City Construction Co. will receive the contract and will award the plates to Western Pipe & Steel Co., San Francisco.

Montana Power Co. proposes to build a 250-mile natural gas pipe line from the Shelby-Cutbank fields. This project would involve more than 50,000 tons of pipe.

Bars, Plates and Shapes

Merchant bars are not active and no large inquiries for reinforcing materials have recently developed. The largest tonnage of the month was taken this week by the Pacific Coast Steel Corp., 600 tons, for the Textile Tower, Seattle. Mill prices of merchant bars are unchanged at 2.25c, reinforcing at 2.30c.

Contract for 700 tons of plates for a 36-inch pipe line for Spokane, was finally awarded to Steel Tank & Pipe Co., San Francisco, for welded pipe. In the issue of Oct. 16, it was reported the contract was taken by Western Pipe & Steel Co., San Francisco, low bidders. Morrison & Knudson, Boise, Idaho, have the contract for a concrete tower and steel tank, for the same improvement, about 125 tons of plates and an equal tonnage of concrete bars. Bids are to be opened this week at Seattle for a 130-foot steel tug for Honolulu interests, involving 250 tons of steel. Seattle will open bids next month for two steel standpipes, 30 feet high, 92 feet in diameter. Mill prices of plates range from 2.10c up, according to tonnage.

Dam Leads Shape Awards

Wallace Bridge & Structural Steel Co. has been awarded the contract for dam gates for the Rock Island power project, about 1200 tons. On the same job bids are in for the power house, calling for 550 tons of shapes. Minneapolis Steel & Machinery Co. is furnishing 550 tons of structurals for the Kress store, Spokane. Plans are preparing for Seattle's Diablo project power house, about 300 tons, and considerable tonnage is involved in the proposed Isthmus bridge, Marshfield, Oreg., bids Nov. 5.

Much Tonnage in Prospect

San Francisco—*(By Air Mail)*—Projects now planned for early closing on the Pacific coast call for more than 50,000 tons of structural steel, furnishing a prospective backlog of good proportions. Placing of 2769 tons of cast iron pipe by Los Angeles was the largest transaction.

Bars, Plates and Shapes

A number of small concrete bar awards were placed, the total exceeding 1900 tons. The Mills building, San Francisco, requiring 450 tons, was placed with Gunn, Carle & Co. Bookings by the Pacific Coast Steel Corp. included 200 tons for tanks at Redwood City for the Pacific Portland Cement Co. An unnamed interest secured 226 tons for a large culvert in Tucson, Ariz.

Plate awards included 450 tons for a pipe line for one of the public utility companies. The largest pending project will take 5000 tons. Bids on this project, a pipe line for San Francisco, will be opened Oct. 29.

Demand for structural steel is holding up fairly well, though awards this week were not particularly heavy. The Southern Sierras Power Co., Calipatria, Calif., and the Pacific Gas & Electric Co., Salinas, placed 500 tons and 300 tons, respectively, for steel pole lines, with the Pacific Coast Steel Corp. No new inquiries of size developed during the week. Quotations remain at 2.15c to 2.25c, c.i.f.

Other Finished Material

Cast iron pipe mill representatives look for increased demand during the next few months. Awards this week were limited to two projects in excess of 100 tons. Fullerton, Calif., placed 331 tons with the American Cast Iron Pipe Co. The 2679 tons of pipe for Los Angeles was allocated as follows: National Cast Iron Pipe Co., 381 tons; Pacific States Cast Iron Pipe Co., 381 tons; United States Pipe & Foundry Co., 986 tons; and American Cast Iron Pipe Co., 931 tons.

Fair Competition Is Road to Remunerative Prices

(Concluded from Page 25)

have any better situation in the steel business until there is fair competition.

I said last spring that the first thing we had to do was to stabilize wages, and they have been carried out. Here and there there is a little petty business going on, and the people who are doing it know all about it, and I hope they will correct it. There are one or two die-hards on the 7-day week and this 12-hour day, but we have practically banished the practice.

We should be doing more business, our plants should be running today, at from 70 to 75 per cent of their capacity. You might say where is the business coming from? We have killed the business through this competition of cutting prices and too much talk about unemployment, and some other things in internecine warfare between the steel people.

That is what has held the customers back. They want steel products but are holding back. There is latent business in this country today in iron and steel to keep our mills running 70 to 75 per cent of their capacity in these times.

I agree with Mr. Schwab that the situation is a little better than it has been, I mean from the standpoint of the recognition of other people's rights but it is only a part of the situation. We think that bars and plates and shapes are in a little better position, and everything is all right. We forget the thousand collateral lines that are also affected.

Now do we want remunerative prices and do we want more business? If we do, when a price list is published which represents cost and a reasonable profit, it should be considered as representing the market.

We have got to get it into our minds that we are not going to have any better return, we might have more volume, but we won't increase the volume until there is genuine stability. It all gets down to one thing, are we going to blow the froth off the situation and be fair with each other in competition.

I am a student of business and a student of international business as well as domestic business, and I am absolutely convinced that it is within our hands here that in a period of 60 days we can get this business back where it belongs and get better prices and I want to tell you, gentlemen, that that means a little purgatory for some people and a little discontinuation of this eratic competition."

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2 points less. Wrought iron pipe, Pittsburgh base.

BUTT WELD

Steel			Iron		
In.	Blk.	Gal.	In.	Blk.	Gal.
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1 and 1¼	31	15
			1½ and 2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7 and 8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7 and 8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, Lap Welded Steel		f.o.b. Pittsburgh Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES
COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill

Random lengths over 5 ft. 55%
Selected lengths, 1 to 18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, N. Y.	38.50 to 40.50
Four-inch, New York	41.50 to 42.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.85c
Detroit	3.00c
Houston	3.00c
Los. Ang.	3.40c
New York††	3.10c
Philadelphia	2.60c
Pittsburgh	2.75c
Portland	3.15c
San Frans.	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York††	3.10c
Philadelphia	2.60c
St. Louis	3.15c
Tulsa	3.65c

REINFOR. BARS

Baltimore	2.50c-3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga	3.10c
Cincinnati	3.15c
Cleveland	2.25c-2.44c
Detroit	3.00c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.75c
San Fran. cl.	2.30c
San Fran. lcl.	2.60c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.65c
Young	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.40c
New York	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York	3.30c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

NO. 10 BLUE

Baltimore	3.50c
Bost. 3/16-in.	9.915c
Buffalo	3.50c
Chattanooga	3.60c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.10c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
New York	3.40c
Portland	4.00c
Phila.*†	3.05c
Pitts.**	2.75c
San Fran.	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt.*†	3.75c
Boston	4.70c
Buffalo	4.20c
Chicago	3.80c
Cincinnati	4.05c
Clev.***	3.75c
Detroit	3.75c
Los Ang.	4.70c
New York	3.55c to 3.65c
Phila.*†	3.60c
Pitts.**	3.40c
Portland	5.00c
San Fran.	4.35c
Seattle	5.00c
St. Louis	4.05c
St. Paul	3.545c
Tulsa	4.45c

NO. 24 GAL. SHEETS

Balt.*†	4.25c
Boston	5.45c
Buffalo	4.40c to 4.60c
Chicago (lc. del.)	4.35c
Chicago (outside shipment)	4.35c to 4.60c
Cincinnati	4.90c
Cleveland***..	4.35c
Detroit	4.25c
Houston	5.40c
Los Ang.	5.10c
New York	4.25c
Phila.*†	4.15c
Pitts.**	4.00c
Portland	5.50c
San Fran.	5.00c
Seattle	5.50c
St. Louis	4.60c
St. Paul	4.23c
Tulsa	5.35c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.50c
Chattanooga	3.30c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.10c
Det. 3/16-in. & lighter	3.30c
Houston	3.65c
Los Ang.	4.30c
New York	3.40c
Philadelphia	2.90c
Pittsburgh	3.10c
Portland	3.50c
San Fran.	3.75c
Seattle	4.15c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.65c
Det. No. 14 & lighter	3.80c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	4.10c
Seattle	5.15c
St. Paul	3.70c

COLD FIN. STEEL
Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.50c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San. Fran.(a)	4.25c
Seattle (a)	4.75c
St. Paul (a)	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
Phila. (c)	4.85c
New York	5.05c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

Here's Pipe that's All Pipe NO SCALE

NO troublesome mill-scale to impair the service of NATIONAL Scale Free Pipe. It comes to you clean and smooth—free from scale, one of the principal causes of corrosion, especially pitting. All butt-weld sizes ½ to 3-inch, in addition to being Spellerized, are made by the NATIONAL Scale Free Process—a special process invented and developed by National Tube Company—to produce pipe that is *all* pipe and no scale. Scale Free Pipe gives you these five advantages—

1. Minimized corrosive tendencies, particularly "pitting"
2. Better base for galvanizing or other protective coatings.
3. Full delivery capacity—less friction loss.
4. No damage to valve seats; no clogging of small orifices.
5. Greater strength at the weld—due to the extra rolling in the process.

Write for Bulletin No. 7—describing specific service advantages of NATIONAL Scale Free Pipe—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY · Pittsburgh, Pa.
Subsidiary of United States Steel Corporation

SCALE FREE PIPE
SPELLERIZED

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 9.50c, del., Conn. for copper

Sheets	
Yellow brass (high)	16.62½
Copper, hot rolled	19.25
Lead, full sheets (cut ½c more)	9.00
Zinc sheet (100-lb. base)	9.50
Tubes and Pipes	
Seamless yellow brass (high)	21.50
Seamless copper	21.62½
Rods	
Yellow brass (high, full turnings)	14.87½
Naval brass	17.00
Anodes	
Copper, untrimmed	16.75
Wire	
Yellow brass (high)	17.12½

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	7.00 to 7.50
Chicago	6.50 to 6.75
Cleveland	6.50 to 7.00
St. Louis	7.00 to 7.25
Heavy Yellow Brass	
New York	4.50 to 4.75
Heavy Copper and Wire	
New York	7.75 to 8.00
Boston	7.25 to 7.50
Chicago	7.50 to 7.75
Cleveland	6.50 to 7.00
St. Louis	6.75 to 7.00
Red Brass Borings	
New York	6.25 to 6.50
Yellow Brass Tubing	
Cleveland	4.00 to 4.50
Light Copper	
New York	6.75 to 7.00
Chicago	6.50 to 6.75
Cleveland	6.00 to 6.50
St. Louis	6.75 to 7.00
Light Brass	
Boston	3.25 to 3.75
Chicago	4.25 to 4.50
Cleveland	3.00 to 3.50
St. Louis	4.00 to 4.25
Zinc	
New York	2.00
Cleveland	1.25 to 1.50
St. Louis	2.00
Aluminum	
Clippings, soft, Cleveland	11.50 to 12.00
Clippings, hard, Cleveland	9.00 to 9.50
Borings, Cleveland	4.00 to 4.50
Cast, Cleveland	6.50 to 7.00
Cast, Boston	5.50 to 6.00
Cast, St. Louis	7.00

Secondary Metals

Remelt aluminum No. 12	13.50
Brass ingot, 85-5-5-5	10.00

Quicksilver Quiet, Holds

New York—Quicksilver is quiet and steady at $111 to $112 a flask.

Metals

Copper Appears Firmer After Cut in Price—Export Sales Rise —Other Metal Buying Lags

New York—Demoralization in the copper market has been outstanding this week. In the past few days, however, the market has become a little firmer after a cut from 10.00c to 9.50c, Connecticut. Large export sales have been made. Domestic business in all of the nonferrous metals has been light. Users are not necessarily holding off because they expect prices to go lower, but their needs are limited, and they see no reason to hurry into the market.

Definite indications of improvement in the metal market still are lacking, though it is taken as obvious that prices cannot go much lower. The sentiment that the next substantial changes will be upward is tempered with a belief that the change will require some months to work itself out. In copper, unlike the other metals, there is some talk that unless evidence of additional curtailment of output appears at an early date, the price may be cut.

Copper—After some talk about a week ago that the market was steady, sentiment swung rapidly the other way and in the past few days all producers have been at 9.50c, Connecticut. At the new price, there has been little buying in the domestic market. Export sales have been large, however. The latter buying has made the market firmer, but as yet there is no evidence to indicate that this steadiness is more than temporary.

Zinc—Prime western has shown much resistance to dullness and the price has been changed little in the past week. Some smelters have stood by higher asking prices, but most of them have been willing to accept business, at least from regular customers, at 3.95c, East St. Louis. There has been talk that at this price production will be forced lower.

Tin—After recovering somewhat above 27.00c a week ago, the market has shown little change. Buying has been light. Stocks of tin in this country have been cut about 1000 tons this month, and in England about 1600 tons. On the other hand, shipments of tin from the Straits now are indicated as above 7000 tons or somewhat more than had been expected. Deliveries here probably will be of good size for October. It is believed that relatively large deliveries mean that consumers are carrying larger inventories.

Lead—New business is light, mostly in car lots for prompt shipment.

Aluminum—New business continues dull but prices are unchanged and steady.—*Daily Metal Trade.*

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots	Spot
Pure benzol	$0.21
90 per cent benzol	0.21
Toluol	0.30
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Delivered	
Sulphate of ammonia	$1.85

Curtail By-Products Further and Price Firms

New York—Restricted production continues to have a firming influence on coke by-products prices. Distillates are in steady demand, with stocks in some instances small. Industrial benzol demand is inclined to be spotty, but buying is brisk for motor fuel. Toluol is moderately active, with lacquer makers taking more material. Prices are unchanged. The general feeling is that higher prices may be expected in several divisions, especially distillates, if reduced coking operations continue.

Prices of the Week, Cents a Pound

	Copper, Electro delivered	Copper, Lake delivered	Copper, Casting refinery	Straits Tin, New York, Spot	Straits Tin, New York, Futures	Lead, New York	Lead, East St. L.	Zinc, East St. L.	Aluminum 98-99%	Antimony, Spot	Nickel, Ingot
Oct. 22	9.75	10.12½	9.37½	27.12½	27.37½	5.10	4.95	3.95	22.90	7.37½	35.00
Oct. 23	9.50	10.12½	9.37½	26.75	27.00	5.10	4.95	3.95	22.90	7.37½	35.00
Oct. 24	9.50	9.62½	9.37½	27.20	27.50	5.10	4.95	3.95	22.90	7.37½	35.00
Oct. 25	9.50	9.62½	9.37½	27.37½	27.62½	5.10	4.95	3.95	22.90	7.37½	35.00
Oct. 27	9.50	9.62½	9.37½	27.12½	27.40	5.10	4.95	3.95	22.90	7.37½	35.00
Oct. 28	9.50	9.62½	9.37½	27.25	27.50	5.10	4.95	3.95	22.90	7.37½	35.00

Europe

British Prices Unchanged as Costs Preclude Meeting Continent—Pig Iron May Drop

Birmingham, Eng.—The Steel association met in London this week and discussed prices but made no change in rates. For the Midland area these stand at £8 7s 6d ($40.69) for angles, £8 10s ($41.31) for joists, and £8 17s 6d ($43.12) for ship bridge and tank plates ⅜-inch and over. Rebates of 12s 6d ($3.03) on joists and 10s ($2.43) on other materials are payable to consumers who pledge themselves to use British steel only. A certain section of the trade has been hoping for a reduction in heavy steel prices. At the same time it has been realized that in view of cost of production any concession would have to be small and quite useless as regards meeting competition from the Continent. To quote an example, joists have been offered this week at £4 ($19.44), f.o.b. Antwerp, or £5 1s 6d ($24.66), delivered, Birmingham. Most engineers in the Midlands are loyal to the rebate scheme, but on the coast a good deal of foreign steel is being used, including joists, sections and plates, and it is easily seen that to the shipbuilders who may be using several thousand tons of plates the temptation to buy foreign material is strong.

Makers Keep Prices Up

A number of traders express satisfaction that steel manufacturers have maintained a firm hold on prices in spite of the slump in trade as they have no wish to see values dragged down unnecessarily. It would not make any difference to the amount of business forthcoming except to keep buyers off the market as is usually the case when a slump sets in.

Steelworks are not improving their position. South Wales is in a parlous condition, with few concerns operating and there are rumors that another steelworks in that district is about to be dismantled, having been closed since 1921. Efforts have been made on several occasions to secure a reopening.

Structural engineers in the Birmingham district have had a number of useful inquiries during the past week for various descriptions of building, including blocks, warehouses, bridges and factories. Railways, however, while proposing to spend a certain amount on erection and renewal of bridge structures, are exercising rigid economy and accept the lowest contract every time.

On the northeast coast it is hoped it will not be necesary to put out more furnaces as demand is now sufficient to absorb the local output. Middlesbrough pig iron prices are maintained and the small reductions in blast furnacemens' wages are not likely to have any effect upon work costs. Hematite is fairly steady and consumption probably exceeds output. In the Barrow district hematite is showing a slight improvement and certain users have extended their buying over a period of several weeks. Midland users of foundry pig iron will not buy beyond the end of the month as they hope that the next meeting of the Central Pig Iron Producers association will bring a reduction. The possibility of this has been emphasized by the reappearance of Continental competition. While no actual sales have been discovered, Continental iron has been offered here at about 1s 6d ($.36) below the Northamptonshire price. This is sufficient to strike alarm to furnacemen for they do not wish to see any of their trade, small as it is, going abroad. A certain section of the foundrymen, however, are anxious to do something which will express their disapproval of the rigid control of Midland prices by the association, and if it is possible to buy iron elsewhere, even if it is only a little cheaper, they will welcome the opportunity to boycott the association.

Sharp Competition Still Prevails in Europe

London—(*By Radio*)—Business continues quiet. A Sheffield firm has obtained an order for buffers requiring 2000 tons of steel, and the Cleveland Bridge Co. has booked a bridge for central Africa, requiring 15,000 tons, and valued at $7,000,000.

The Middlesbrough steel trade has improved slightly although works operate only three days a week. Luxemburg pig iron is selling in Birmingham at £3 7s 6d ($16.40) against a domestic price of £3 10s ($17). Demand for tin plate and galvanized sheets is dull.

Berlin reports iron and steel exports are restricted. Belgians competing with German mills in Germany. Some No. 24 gage sheets have been sold by the Germans in America at £7 15s ($37.66).

Conditions in France are unchanged, prices continuing easy. Prices in Belgium show further reduction. The future of the European steel entente still is uncertain, but members are hopeful.

Germany Sees Lower Prices Its Only Salvation

Berlin—The question of a reduction in domestic iron and steel prices again has come to the fore. Negotiations have been started between iron producing and iron consuming industries, in co-operation with the government, to investigate the policy of prices and costs of the producers, and it cannot be doubted that the consumers will ask for an adaptation of the domestic quotations to the reduced world market level. They will do this all the more so because the steel-masters are granting rebates to large consumers to a growing extent, and they also undertake to meet the cheap Belgian offers in Germany. Steelmasters, on their side, will ask for their costs to be reduced by reducing wages, which would be in accordance with the policy followed by the government, but which, however, would be severely opposed by the workers. It should be mentioned that the domestic price of merchant bars at 137 marks is by 52 marks, or about 60 per cent, above world market prices, a disproportion which cannot, of course, continue indefinitely.

Export business remains most unsatisfactory. The steelworks association, which had kept its price above the Brussels quotation, has again entered the market to obtain work for its members. An endeavor will be made to come to an agreement with certain Belgian rolling mills. Quotations for merchant bars have receded to about £4 4s ($20.44), a price which does not appear to have registered since the outbreak of the war. Structural shapes are offered as low as £3 19s ($19.23). Japanese orders have declined.

Belgian Trade Steady

Brussels—Exports of pig iron from Belgium and Luxemburg in July were lower than in June, while other iron and steel products gained. In imports the condition was reversed, pig iron imports in July gaining over June, while other iron

and steel products were lower than in June. Comparisons follow:

Mon. ave.	— Imports — Pig iron	Other iron and steel	— Exports — Pig iron	Other iron and steel
1927	31,760	28,000	11,350	388,000
1928	45,910	38,000	8,240	380,000
1929	56,150	37,000	10,090	394,500
1930				
Jan.	44,274	37,200	13,551	392,000
Feb.	38,121	32,700	7,320	295,600
Mar.	42,240	29,600	9,412	403,900
April	36,504	26,200	10,624	436,400
May	34,007	28,000	10,266	355,600
June	29,287	28,400	8,410	314,500
July	31,676	23,750	7,876	318,600

German Trade Slumps

Berlin—German trade in both exports and imports was lower in August than in July. The figures in each department were the lowest for the year to date. Comparative figures follow:

Mon. ave.	— Imports — Pig iron and ferro-alloys	Other iron and steel	— Exports — Pig iron and ferro-alloys	Other iron and steel
1927	23,895	217,505	29,910	347,645
1928	25,535	174,250	24,585	394,575
1929	14,765	137,435	36,115	448,330
1930				
Jan.	22,004	105,127	33,153	488,245
Feb.	13,597	98,397	24,271	409,822
March	16,777	107,401	25,983	465,166
April	12,032	113,195	18,364	405,633
May	16,070	114,548	23,164	439,791
June	13,669	88,342	18,814	341,828
July	14,689	90,630	16,811	332,546
August	12,495	91,539	12,929	324,751

British Exports Lower as Imports Increase

London—A substantial drop in exports of British iron and steel was registered in September, when abnormally low figures were reached.

Imports of pig iron, ferro-alloys and other iron and steel products into Great Britain in September were the highest for the year to date. Most of the September imports came from Belgium. Comparative figures follow, in gross tons:

Mon. ave.	— Imports — Pig iron and ferro-alloys	Other iron and steel	— Exports — Pig iron and ferro-alloys	Other iron and steel
1927	50,715	316,455	27,580	322,100
1928	9,935	231,390	37,895	317,210
1929	12,310	222,410	45,430	319,520
1930				
Jan.	15,770	294,546	40,445	311,401
Feb.	24,252	235,144	26,865	267,422
Mar.	23,186	257,106	39,461	298,253
April	21,254	213,552	30,100	237,895
May	23,039	210,686	32,586	262,143
June	25,031	189,473	21,588	229,381
July	25,674	173,114	25,086	278,358
Aug.	21,931	173,473	22,026	218,828
Sept.	30,484	193,345	13,459	186,821

German Output Falls

Berlin—Production of pig iron, steel ingots and castings and finished steel in Germany in August dropped sharply from the July totals. Three less blast furnaces were blowing, dropping from 77 to 74. Comparative figures follow:

Mon. ave.	Pig iron	Steel ingots and castings	Finished steel
1913*	909,640	993,640	970,240
1927	1,091,875	1,359,225	1,069,930
1928	984,700	1,209,770	880,690
1929	1,116,730	1,353,820	940,425
1930			
Jan.	1,092,206	1,275,023	896,076
Feb.	964,517	1,176,435	797,899
March	1,007,576	1,201,206	834,349
April	901,358	1,033,383	737,355
May	859,657	1,034,088	735,741
June	767,395	859,310	603,378
July	770,928	905,763	664,401
August	739,083	896,514	619,861

*Present boundaries.

France Imports More Coke

Paris—Output of coke ovens at French collieries in August declined from July and imports increased somewhat. Comparisons follow, in metric tons:

Mon. ave.	Production	Imports	Exports
1913	335,620	255,835	17,085
1927	339,015	395,580	33,430
1928	366,660	447,330	34,810
1929	397,435	453,720	39,070
1930			
Jan.	414,797	442,754	37,473
Feb.	392,950	403,887	15,905
March	443,909	385,742	11,779
April	419,348	450,437	13,371
May	426,327	386,422	21,605
June	416,992	386,359	24,333
July	427,121	352,388	40,460
August	422,526	369,741	39,947

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, October 27	*British* Gross Tons U. K. Ports	*French* Metric Tons Channel Ports	*Belgium and Luxemburg* Metric Tons Channel Ports	*German* Metric Tons Rotterdam or North Sea Port
Export Prices f. o. b. Ship at Port of Dispatch—By Cable	£ s d	£ s d	£ s d	£ s d
PIG IRON				
Foundry No. 3, Silicon 2.50-3.00	$15.43 3 3 6*	$12.64 2 12 0	$12.64 2 12 0	$13.37 2 15 0
Basic-bessemer	15.92 3 5 6†	12.64 2 12 0	12.64 2 12 0	13.37 2 15 0
Hematite, Phosphorus 0.02-0.05	17.25 3 11 0	....	....	17.74 3 13 0
SEMIFINISHED STEEL				
Billets	$27.95 5 15 0	$17.01 3 10 0	$17.01 3 10 0	$17.01 3 10 0
Wire rods	41.31 8 10 0	29.16 6 0 0	29.16 6 0 0	29.16 6 0 0
FINISHED STEEL				
Standard rails	$40.10 8 5 0	$31.59 6 10 0	$31.59 6 10 0	$32.08 6 12 0
Merchant bars	1.68c 7 15 0	.89c 4 1 0	.89c 4 1 0	.91c 4 3 0
Structural shapes	1.68c 7 15 0	.82c 3 14 6	.82c 3 14 6	.84c 3 16 0
Plates, ship, bridge and tank	1.79c 8 5 0	1.05c 4 15 0	1.05c 4 15 0	1.05c 4 15 0
Sheets, black, 24 gage	2.17c 10 0 0	1.83c 8 6 3	1.83c 8 6 3	1.98c 9 0 0
Sheets, galvanized, 24 gage, corrugated	2.52c 11 12 6	2.35c 10 13 9	2.35c 10 13 9	2.64c 12 0 0
Bands and strips	2.17c 10 0 0	1.00c 4 11 3	1.00c 4 11 3	1.05c 4 15 0
Plain wire, base	2.06c 9 10 0	1.46c 6 12 6	1.46c 6 12 6	1.33c 6 1 0
Galvanized wire, base	3.04c 14 0 0	1.60c 7 5 0	1.60c 7 5 0	1.61c 7 6 0
Wire nails, base	2.39c 11 0 0	1.32c 6 0 0	1.32c 6 0 0	1.32c 6 0 0
Tin plate, base box 108 pounds	$ 4.13 0 17 0	....	....	$ 8.75 1 15 0
Domestic Prices at Works or Furnace—Last Reported		Francs	Francs	Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$15.43 3 3 6	$19.21 490(2)	$16.18 580	$19.79 83
Basic pig iron	15.80 3 5 0	20.58 525(1)	12.83 409	21.10 88.50
Furnace coke	3.16 0 13 0	6.58 168	5.30 190	5.13 21.50
Billets	27.95 5 15 0	21.56 550	17.58 630	28.01 117.50
Standard rails	1.79c 8 5 0	1.46c 810	1.61c 1,240	1.47c 136
Merchant bars	1.68c 7 15 0	1.12c 620	.98c 750	1.48c 137
Shapes	1.84c 8 10 0	1.12c 620	.98c 750	1.45c 134
Plates, ship, bridge and tank	1.95c 9 0 0‡	1.46c 810	1.15c 890	1.65c 153
Sheets, black, 24 gage	2.28c 10 10 0	2.63c 1,460	2.47c 1,900	1.36c 126
Sheets, galvanized 24 gage, corrugated	2.52c 11 12 6	3.74c 2,075	2.60c 2,000	3.67c 340
Plain wire	2.06c 9 10 0	2.03c 1,125	2.15c 1,650	2.45c 217
Bands and Strips	2.17c 10 0 0	1.25c 695	1.37c 1,050	1.72c 159

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.16) f. o. b. Ferromanganese £19 6s 0d ($93.80) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.54) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Machinery

CONDITIONS in the industrial centers of the Great Lakes region are less encouraging than in the East, judging from market reports as well as reports of widespread unemployment in the metalworking industries. The optimistic tone of Chicago has been silenced by a month of poor business, although hopes are expressed for recovery early in 1931. Similar conditions exist in Cleveland, where business relief is expected as a by-product of nation-wide unemployment relief. At least two substantial orders for machine tools have been placed with New York dealers, who also report well spread demand for single tools, mostly for replacement.

New York—Machine tool equipment sales and inquiry are limited, although in several instances dealers and builders have booked some good orders. One dealer sold more than 20 tools to metalworking interests during the last two weeks. Four boring mills and eight radial drills have been placed by the Baldwin Locomotive Co. Business as a rule, however, is limited to one or two tools at a time, mostly for replacement. Demand is well spread, although the metal industry is taking considerable of the current volume.

Inquiry has failed to expand. Railroads are buying sparingly. Budgets provide for little machine tool buying before the turn of the year. Interest in equipment after that period is uncertain. Activity among eastern shipyards is resulting in some sales and inquiry. Prices on some foreign business are reported to have included concessions covering the dealer's commissions and in some instances more. Grinding machinery demand is spotty.

Worcester, Mass.—Machine tool conditions are showing little change. The occasional orders for single units in various fields are still coming in, although the lathe and drill business is reported to be at the bottom level. Grinders have tapered off so far as domestic demand is concerned, although there is some demand for foreign delivery.

Pittsburgh—Machine tool awards are slow to expand. October sales show little if any change from the September volume, despite the fact that inquiries have been slightly more numerous this month. Recent inquiry has been slightly less active and limited to only a few tools at a time. Awards consist mostly of single items.

Cleveland—Machine tool conditions fail to show improvement, in fact, several manufacturers and dealers report their general level of business during the first three weeks of October to be below the general level of September. Inquiry is down, although still of fair volume, but most prospects fail to close, in spite of persistent and carefully planned sales efforts. The best machine tool business reported this week has been with companies engaged in the manufacture of plumbing supplies, and of fittings used in laying pipe lines. This business has included threading and cutting off machines, as well as threading dies, taps and other accessories.

The launching of nation-wide unemployment relief measures such as the speeding up of road building, construction of public buildings, etc., is believed to hold forth possibilities for increased machine tool sales to companies engaged in the manufacture of tractors, road machinery and other equipment used in large-scale projects of this kind. Builders of this kind of machinery in the Cleveland district have enjoyed fair business during the past summer and have purchased some machine tools.

Chicago—Falling to regain ground lost in the last three weeks, machine tool dealers report that sales this month will fall short of September. Several houses report little business of consequence closed during the week, aside from parts and accessories. Half a dozen presses, several drills and light shop equipment constituted the bulk of the orders placed here. Action following inquiries has been postponed, presumably until after the first of the year, and prospects are for scattered single items. Several expected programs have been dropped. Rumors have been heard of probable reductions in prices of several lines, but no indication appears as yet that this will become general.

Exports of Metalworking Machinery

	September		January through September	
	1930	1929	1930	1929
Engine lathes	44	85	950	663
Turret lathes	20	47	352	395
Other lathes	30	111	552	753
Vertical boring mills and chucking machines	23	11	266	182
Thread-cutting and automatic screw machines	46	80	553	760
Knee and column type milling machines	19	53	269	361
Other milling machines	28	60	589	523
Gear-cutting machines	35	32	339	366
Vertical drilling machines	39	27	417	327
Radial drilling machines	.....	7	143	89
Other drilling machines	115	167	1,327	1,677
Planers and shapers	21	53	289	402
Surface grinding machines	.....	21	157	201
External cylindrical grinding machines	20	89	446	634
Internal grinding machines	8	37	268	350
Tool grinding, cutter grinding, and universal grinding machines	84	85	1,360	1,130
Pneumatic portable tools	1,194	2,125	14,953	19,069
Chucks for machine tools	650	715	18,930	16,333

September Overhead Crane Orders Also Decline

New York—Shipments and new orders continue to decline in September, according to the Electric Overhead Crane institute. Shipments totaled 69 units with a tonnage capacity of 1550½ valued at $941,570. This compares with 80 units, tonnage capacity 1589, valued at $728,923 in the previous month.

New orders booked included 52 units, tonnage capacity 1589, valued at $728,923 in the previous month.

New orders booked included 52 units, a drop of two from August, with a tonnage capacity of 1508¼ valued at $614,070, compared with a tonnage capacity of 946 valued at $522,011 in August.

Unfilled orders Oct. 1 included 154 units with a tonnage capacity of 4035¾ valued at $2,123,598.68. On Sept. 1 unfilled orders totaled 178 units with a tonnage capacity of 4193 valued at $2,526,507.68.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

HARTFORD, CONN.—Hartford Electric Light Co., 266 Pearl street, has awarded contract to Industrial Construction Co., 721 Main street, for a 25 x 30-foot substation. Estimated cost, $40,000.

STRATFORD, CONN. — Stratford Rolling Mills Inc., a new firm, is reported to be planning a plant for the reduction of alloy metal products.

BOSTON—Boiler house addition is to be built by Beacon Laundry Co., 14 Lenox street. C. T. Main Co., 201 Devonshire street, is engineer.

BOSTON—City, James M. Curley mayor, recently noted as planning to acquire Governors island for an airport, has arranged with federal authorities for the establishment of the largest port for airplanes and seaplanes on the Atlantic coast. Eventual expenditures may amount to $18,000,000. (Noted July 17.)

FITCHBURG, MASS. — Independent Lock Co. has acquired the door-check manufacturing division of the Worcester Taper Pin Co., Worcester, Mass., and has installed it in its Fitchburg plant, which will be expanded in the future.

GLOUCESTER, MASS.—Cape Ann Anchor & Forge Co., steel forgings, advises through F. A. Fisher, president, that a recent fire caused no loss of machinery, and operations were resumed within two days. (Noted Oct. 16.)

PROVIDENCE, R. I.—Narragansett Electric Co., Old Industrial Trust building, has awarded contract to the New England Power & Construction Co., Harris avenue, for a 3-story, 35 x 40-foot substation. Estimated cost, $40,000.

New York

BROOKLYN — Donigan & Nielson, Twenty-fourth street and Third avenue, are having preliminary plans made for a work shop. S. L. Malkind is architect. Cost is estimated at $40,000. Company manufactures automobile bodies.

BUFFALO—J. H. Williams Co., 400 Vulcan street, is building a plant in Tonawanda district for the manufacture of wrenches and tools. Estimated cost, $50,000.

JAMESTOWN—Kitzinger Ornamental Iron Works Inc., Washington street, has secured space in the former plant of the Peterson Planing Mill, and is altering it for plant purposes.

MIDDLEPORT—Niagara Sprayer & Chemical Co. plans to rebuild a portion of a 1-story unit, 100 x 200 feet, recently damaged by fire. Company manufactures spraying equipment.

NEW YORK—Ace Steel Partition Corp. has been incorporated with $1000 capital by M. Lefkort, 1440 Broadway.

NEW YORK—Anthracite Stokers has been incorporated with $50,000 and 500 common shares by Deutsch & Trier, 5 Roosevelt avenue, Queens, New York, to deal in heaters.

NEW YORK—Cohrone Boat Co. has been incorporated with $100,000 capital by E. Tacker, 1501 Broadway, to deal in tools.

NEW YORK—Manhattan Spring & Couch Co. has been incorporated with 1800 common shares by Attorneys' Albany Service Co., 299 Broadway, to deal in brassware.

NEW YORK — National Keelock Products has been incorporated with $50,000 capital by C. S. Fisher, Jamaica, N. Y., to deal in motion picture machines.

NEW YORK—Sun Ray Lighting Products Inc., 119 Lafayette street, recently suffered fire damage at its plant. Company manufactures lighting fixtures.

Pennsylvania

EASTON—Easton Air Terminal Inc. has been incorporated with $100,000 capital by John Stead, 333 Reeder street, to manufacture and operate airplanes.

NORTH EAST—Eureka Electrical Products Co., recently organized with $50,000 capital by Charles H. Hays Jr., is beginning the manufacture of electrical specialties, mechanical novelties and parts.

PHILADELPHIA—F. & S. Aircraft Corp. has been incorporated by Joseph A. Simcock, 6437 Hasbrook avenue, to manufacture and repair aircraft.

New Jersey

CALDWELL—Metal Frame Aquarium Corp. has been incorporated with 250 common shares by Elias B. Cohn, to deal in aquarium supplies.

ELIZABETH—Fisher & Dackerman, 1153 Chestnut street, have asked bids for the construction of a 1-story addition to their plant for the manufacture of automobile and truck bodies. Cost is estimated at $40,000. W. L. Finne, 1201 East Grand street, is architect.

MONTCLAIR—Millard F. Smith Co. has been incorporated with $75,000 capital by T. L. Zimmerman Jr., Ridgewood, N. J., to deal in machinery.

NEWARK—Unsinger Cutlery Co. has been incorporated with $100,000 capital by Frederick Jay, 24 Commerce street, to manufacture cutlery.

NEWARK — American Outboard Drive Corp. has been incorporated with 2500 common shares by Phillip D. Elliott, 972 Broad street, to deal in motors and boats.

NORTH BERGEN—Tungsten Contact Mfg. Co. Inc. has been incorporated with $100,000 and 2000 common shares by VanDoren, Conklin & McNevin, New York, to deal in electrical appliances.

TRENTON—Department of institutions and agencies, state office building, will award contract for the construction of a power plant at the state prison. C. N. Leathem Jr., division of architecture and construction, state office building, is engineer. Cost is estimated at $40,000.

Ohio

CINCINNATI—C. R. Talbot Co., 2245 Bogen street, has private plans for alterations and additions to cost $75,000. D. Meinken & Son, 2143 Barnard street, are the contractors.

CINCINNATI—E. H. Bardes Range & Foundry Co., 2619 Colerain avenue, will build a plant addition, 52 x 105 feet, immediately. Kruckemeyer & Strong, St. Paul building, are architects.

CLEVELAND—Cleveland Steel Specialty Corp., 6600 Park street, has awarded contract to J. L. Hunting Co., Guarantee Title building, for a new 1-story plant to be erected on a site recently acquired at East Ninety-first street and Way avenue. New unit will contain 10,000 square feet of floor space and will cost approximately $18,000.

COLUMBUS—Meter Parts Co., 412 Spruce street, is a new firm here, manufacturing gas meter diaphragms. C. C. Moore is general manager.

COLUMBUS—Jaeger Machine Co., recently noted as taking bids for an addition, will move its division, the Lakewood Engineering Co., Berea road and West 117th street, Cleveland, to the plant addition here. Contract for the unit, which adds 32,000 square feet of floor space, has been awarded to Theodore J. Schirtzinger, Columbus. O. G. Mandt is general manager of the Jaeger company. (Noted Oct. 23.)

DAYTON—Hohman Plating Co., William Hillman president, 815 East Fifth street, is considering erection of a 3-story power plant, 80 x 133 feet. Cost is $75,000.

FOSTORIA—Plant of the American Railway Signal Co. recently was destroyed by fire, with a loss estimated at $25,000. Company plans to rebuild.

FOSTORIA — Fostoria Screw Co., East Fourth street, Louis W. Karg superintendent, has started work on a plant addition, 80 x 150 feet, to be completed in about 90 days at a cost of $50,000. Contract is held by J. H. Jones & Sons. Addition is first step in an expansion program which calls for the expenditure of $150,000.

IRONTON—Henrite Products Co., Albert C. Henry president, manufacturer of graphite and copper brushes for generators and motors, has awarded contract for a plant addition. Company recently consolidated Cooley Mfg. Co.

Inc. and Channel Packing Co. Inc., both of New York.

LORAIN—Thew Shovel Co. is preparing private plans for a plant addition at East Twenty-eighth and Fulton streets. Maturity early in the spring.

OBERLIN—Oberlin college, Dr. Ernest Hatch Wilkins president, has preliminary sketches under way by Cass Gilbert, 244 Madison avenue, New York, architect, for a group of buildings. Science building, costing $1,000,000; physics laboratory, $400,000; office, stores and shop unit, $125,000; and a power plant, $200,000, are included in the plans. Order of maturity of units is indefinite.

XENIA—State board of control, state building, Columbus, O., has appropriated $16,760.36 for the construction of a machine shop at the Ohio soldiers and sailors orphans' home, here.

Indiana

GARY—School commissioners have closed bids for the construction of a school building, to include a boiler plant. W. B. Ittner, 911 Locust street, St. Louis, is architect. Cost of the project, $1,000,000.

WABASH—Rock Insulator Co. advises through G. M. Diehl, G. M. Diehl Machine Works, that the new addition for the manufacture of rock wool insulation will consist of three units, a 2-story cupola room, 19 x 76 feet, a 1-story blowing room, 59 x 76 feet, and a 1-story store room, 58 x 76 feet. (Noted Oct. 23.)

Michigan

DETROIT—Drake-Sorg Boats Inc., 2206 Twelfth street, has been incorporated with $100,000 capital by Theodore R. Drake, to manufacture and deal in boats, motors and accessories.

DETROIT — Griswold Powermatic Corp., care of Griswold Motor & Body Corp., 5838 Commonwealth avenue, has been incorporated with $10,000 capital to manufacture and deal in loading and unloading devices.

DETROIT—Wayne county board of auditors, county building, has asked bids for two engines and generators, electrical and mechanical equipment for installation in the Wayne county detention home, Forest avenue and Rivard street. A. H. Gould & Son, 601 Empire building, are engineers. Cost is estimated at $25,000.

L'ANSE—Duluth, South Shore & Atlantic railroad, West Superior street, Duluth, proposes to build a roundhouse and shop here.

MARSHALL—General Steel Products Co., Byron Watts and Earl DeLong copartners, of Battle Creek, Mich., has leased a portion of the old Simons-Leedle plant here and will move its plant. Future expansion will necessitate employment of 60 men within six months. Company manufactures steel truck bodies, electrically welded, and small metal articles.

Illinois

CHICAGO—Mobile Radio Corp., 2009 South State street, has been incorporated with $1000 capital by A. Edward Aberman, 139 North Clark street, to manufacture radios.

CHICAGO—Hosmer Mfg. Co., room 2115, 11 South LaSalle street, has been incorporated with $1000 capital by Poppenhuysen, Johnson, Thompson & Cole, to manufacture and deal in machinery.

CHICAGO—Midland Steel & Equipment Co., 400 South Clinton street, has been incorporated with $50,000 capital by Hopkins, Starr & Hopkins, 110 South Dearborn street, to deal in steel products.

CHICAGO—Auto Equipment Mfg. Corp. has been incorporated with 500 no par shares by R. L. McVean, 10 South LaSalle street, to deal in automobiles and accessories.

COLCHESTER—City plans waterworks improvement, including construction of a pumping unit and installation of two centrifugal pumps. W. A. Fuller Co., 2916 Shenandoah avenue, St. Louis, is engineer. Cost is estimated at $70,000.

Southern States

WOODWARD, ALA.—Woodward Iron Co. is installing pig casting machine at its blast furnaces. Approximate cost, $300,000.

DOVER, DEL.—National Electromatic Corp. has been incorporated with 150,000 common shares by United States Corporation Co., to deal in electric water heaters.

WILMINGTON, DEL.—John McIntyre Inc. has been incorporated with $50,000 capital by Harry P. Joslyn, Ford building, to deal in sheet iron, copper and tin.

PLANT CITY, FLA.—City council is reported to have let contract to Virginia Bridge & Iron Co., Roanoke, Va., for airport construction. Estimated cost, $26,000.

TAMPA, FLA.—C. L. Hills, box 2452, is reported to be in the market for one 200 to 300-horsepower diesel engine, with 3-phase, 60-cycle generator.

ELBERTON, GA.—City proposes to build a hydroelectric plant. H. S. Jandon Engineering Co. is engineer.

SAVANNAH, GA.—Southern States Iron Roofing Co., recently noted as providing facilities for the manufacture of steel barrels, advises that production has started on light weight and tight steel barrels. Future plans, maturity indefinite, call for erection of a new plant unit. (Noted Oct. 23.)

NEW ORLEANS—Louisiana & Arkansas railway, E. F. Salisbury chief engineer, Minden, La., is considering expenditure of about $3,000,000 next year for warehouse and terminal facilities here.

BALTIMORE—United Railways & Electric Co., A. T. Clark, Court Square building, is altering its carbarn and building an addition at Eastern avenue and Haven street. Contract is held by Herbert J. West, Knickerbocker building.

BURLINGTON, N. C.—Machine shop of Sykes Foundry & Machine Co., Maple avenue extension, recently was destroyed by fire. Loss is estimated at $20,000 to $30,000. A. E. Sykes is owner and A. H. Fogleman lessee.

COLUMBIA, S. C.—University of South Carolina, D. M. Douglas president, will receive bids about Nov. 1 for a 2-story laboratory. J. C. Johnson is architect. Cost of construction is estimated at $250,000 and cost of equipment at $50,000.

GREENVILLE, S. C.—Steel Heddle Mfg. Co., East McBee avenue, has let contract for a kiln and storage building, 22 x 135 feet, to Potter & Shackelford, Allen building.

CLIFTON FORGE, VA.—Chesapeake & Ohio railway, C. W. Johns chief engineer, Richmond, Va., recently noted as planning locomotive shop improvements, has let contract for alterations to tank shop, construction of an engine hoist building, 50 x 130 feet, and for remodeling transfer table, to J. A. Fix & Sons, Lynch building, Lynchburg, Va. Cost of the project, including machinery, $140,000. (Noted Oct. 23.)

RICHMOND, VA.—Hackley Morrison Co. Inc., 1708 Lewis street, is inquiring for a structural iron punch.

RICHMOND, VA.—Crewe Tool Works Inc. has been incorporated with $35,000 and 1600 common shares by Tucker, Bronson & Mays, to manufacture machinery and tools.

Missouri

KANSAS CITY—Kansas City Oxygen Gas Co., 2012 Grand avenue, advises through R. E. Stone that a new 1-story unit to be erected will contain 20,000 square feet of floor space. Contract has been awarded to Stauch Construction Co., Railway Exchange building. Modern gas equipment will be installed. (Noted Oct. 23.)

OSAGE CITY—Missouri state prison, F. B. Jones director of penal institutions, Jefferson City, Mo., plans to build a group of buildings here, to include a shop and boiler house.

ST. LOUIS—American Car & Foundry Co., Syndicate Trust building, is reported to be considering erection of a plant addition. Cost is estimated at $100,000.

ST. LOUIS—Bayless-Miller Corp. has been incorporated with $25,000 capital by C. H. Bayless, Title Guaranty building, to engage in mining.

ST. LOUIS—Arbee Lead Mines Inc. has been incorporated with $150,000 capital by William E. Allen, 4852 Mecklenburg street, to develop mines in Jefferson county.

ST. LOUIS—International Coin Sep-

arator Co. has been incorporated by G. A. Morris, 2537 Natural Bridge avenue, to manufacture coin separating machines.

Oklahoma

FAIRFAX—City council is having preliminary plans prepared privately for a municipal light plant, to be erected at a cost of about $50,000.

HOMINY—City is holding in abeyance plans for a power plant recently noted and will install engines and pumping equipment at the municipal waterworks. V. V. Long & Co., Colcord building, Oklahoma City, Okla., are engineers. (Noted Oct. 2.)

TULSA—Continental Supply Co., 18 South Main street, is reported to have let contract for a 2-story storage unit, 75 x 140 feet, to George J. Bowie, Daniel building. Estimated cost, $30,000. A. M. Atkinson, Mid-Continent building, is architect.

Texas

COLLEGE STATION—Agricultural and Mechanical college of Texas, B. D. Marburger superintendent of utilities, is receiving bids for one 1000-gallon per minute motor-driven centrifugal pump.

DALLAS—Kool Air Corp., 313 South Harwood street, is reported to plan erection of a plant to manufacture air conditioning equipment for theaters. Initial unit would cost $30,000.

GRAND SALINE—Southwestern Gas & Electric Co. has started construction of a substation to cost $20,000.

PORT ARTHUR—City will receive bids until Nov. 6 for pump station equipment, including three pumps of 195,000 gallons capacity. Estimated cost, $350,000. J. W. O'Neal is mayor.

Wisconsin

BELOIT—Ray Phelps, manufacturer of electrical products, has let contract for the erection of a 2-story shop, 30 x 50 feet, with two 1-story wings, each 30 x 100 feet, on a new site at Yates avenue and Argyle street.

MILWAUKEE — General Grinder Corp., recently organized by Van B. Hooper, has located at 250 Milwaukee street. Company will manufacture tool grinders and hardware specialties.

MILWAUKEE—Heil Co., Twenty-sixth and Montana avenues, manufacturer of steel tanks, dump truck bodies, and hydraulic hoists, is building a warehouse unit, 50 x 111 feet. A $200,000 plant addition is nearing completion.

WAUKESHA—Waukesha Armature Works, 465 West Main street, advises it will be in the market for a coil winding machine. Company repairs and deals in motors, and does power plant work.

Minnesota

MINNEAPOLIS—Strong-Scott Mfg. Co., Third street south, manufacturer of mill and elevator machinery, will build a new plant unit on Taft street, between Traffic and Kennedy streets. Unit is to be 1-story, 100 x 360 feet, and will cost about $185,000. Machine shop equipment will be required.

Kansas

COFFEYVILLE—Jensen Bros. Mfg. Co., Fourteenth and Pacific streets, advises through K. R. Jensen that the new plant addition being built will be ready for use about Jan. 1. New unit is for machine work, and old shop will be used for storage and assembly. Some new equipment will be purchased, as noted. (Noted Oct. 23.)

TOPEKA—Atchison, Topeka & Santa Fe railroad, H. W. Wagner chief engineer, is having revised plans prepared for the construction of a boiler house addition. Approximate cost, $22,000.

Nebraska

WYMORE—Gage County Electric Co., Beatrice, Nebr., has started construction of a power plant here.

Pacific Coast

BEAR RIVER, CALIF.—Pacific Gas & Electric Co., 245 Market street, San Francisco, is investigating a power development on the Bear river, and is considering a power project producing 34,000 horsepower.

CHICO, CALIF.—Boiler installation and plant of the Chico Canning Co. recently was destroyed by fire. Damage is estimated to have caused a $15,000 loss.

FRESNO, CALIF.—Commercial Iron Works of Los Angeles, 2005 Broadway, plans construction of a plant, 25 x 130 feet, on a site recently acquired on Echo avenue.

HOLLYWOOD, CALIF.—R-K-O Radio Pictures Corp., 1560 Broadway, New York, plans to erect a laboratory unit here at a cost of about $1,000,000.

LOS ANGELES—Oliver Farm Equipment Sales Co., West Eleventh street, has awarded contract for a plant 120 x 153 feet, a warehouse 76 x 120 feet and a 40 x 120-foot parts building. Cost is estimated at $50,000.

LOS ANGELES—Security-First National Bank of Los Angeles, Fifth and Spring streets, advises through Erwin W. Widney, trust counsel, that the estate of Col. G. J. Griffith will build a small unit to house a 12 to 24-inch telescope, and another unit for a hall of science. A planetarium is planned. Maturity next year. (Noted Oct. 16.)

LOS ANGELES—Whitlock Metered Mail Co., 1213 East Fourteenth street, W. R. Lord vice president, has started construction of a 2-story addition which will double present capacity. Estimated cost, $140,000. With equipment, expenditure for expansion will amount to a total of $325,000. Company manufactures machinery for stamping and sealing mail.

OAKLAND, CALIF.—Westinghouse Electric & Mfg. Co., Powell and Peladeau streets, is reported to be receiving bids for a 1-story addition costing $25,000, to be erected from private plans.

REDDING, CALIF.—Iron Mountain mine, near here, is reported to plan a new plant with equipment, with capacity of 360 tons weekly.

SAN FRANCISCO—Kindel & Graham, 782 Mission street, manufacturers of novelties, have leased additional space for their manufacturing and casting departments. Company now occupies 100,000 square feet of floor space.

SAN FRANCISCO—Soule Steel Co., Rialto building, plans to build a 1-story plant on Army street, between Missouri and Mississippi streets. Cost is estimated at $30,000. J. A. Cole, 2178 Oregon street, Berkeley, Calif., is engineer.

SAUSALITO, CALIF.—Italian American Motors Co., 604 Montgomery street, San Francisco, is receiving bids for a 1-story shop and plant unit, to be erected here at a cost of about $15,000. McFarland & Moore, 126 Otis street, San Francisco, are architects.

SIGNAL HILL, CALIF.—Four Point Service Welding & Machine Shop, A. Prout manager, 5795 Cherry avenue, is a new company here.

STOCKTON, CALIF.—Le Tourneau Mfg. Co. advises through O. H. Barnhill that a plant 60 x 200 feet is being erected, fabricated entirely by welding. Company makes all-steel electric-welded grading machinery. R. G. LeTourneau is president. (Noted Oct. 9.)

ASHLAND, OREG.—City council proposes to build a municipal airport, and is considering improvements of a site.

PORTLAND, OREG.—Armstrong Mfg. Co., 4 Second street, is constructing a shop at 455 North Twenty-first street. Estimated cost, $11,000. Company manufactures saw tools.

BELLINGHAM, WASH. — Union Foundry Inc., recently incorporated by John A. Kellog, attorney, is reported to be starting operation of a foundry. J. C. Borchardt is a member of the firm.

WALLA WALLA, WASH.—City council has purchased a site for Veterans' Memorial airport. Improvement and construction program costing $50,000 is under way.

YAKIMA, WASH.—Schichtl Bros., 502 South Second street, are building a 1-story machine shop, 50 x 80 feet, to cost $20,000. Metal products are manufactured.

Dominion of Canada

FT. WILLIAM, ONT.—Board of education plans to build a 3-story technical

high school at a cost of $400,000. Bids have been closed by R. E. Mason, Francis block.

FERGUS, ONT.—Beatty Bros., W. C. Beatty, manufacturers of washing machines and pumps, will take over Canadian production of the Springfield Incubator Co., Springfield, O., and install equipment.

GRAVENHURST, ONT. — Rainbow Craft Ltd., care of S. D. Terry & Co., Canadian Pacific building, Toronto, Ont., proposes to build a 40 x 200-foot plant at a cost of about $35,000. Company will install machinery and equipment for the manufacture of boats.

HAMILTON, ONT.—Tallman Brass & Metal Co., Cavell avenue, is reported to have acquired a new plant, and to be planning installation of equipment for the manufacture of bronze and aluminum castings and babbitt metals.

NORTH BAY, ONT.—Canadian Longyear Ltd. has been incorporated with 500 no par shares by Elwin D. Wilkins and John J. O'Connor, Sudbury, Ont., to engage in the business of consulting engineer and to manufacture machinery.

OSHAWA, ONT.—Plate Lock Battery Mfg. Co. has opened a plant near that of the Westman Machinery Co. and will begin production soon.

OTTAWA, ONT.—Rayflectors Corp. Ltd. has been incorporated with $50,000 and 50,000 no par shares by James W. York and Henry A. Aylen, to manufacture and deal in signs and automatic control apparatus.

OTTAWA, ONT.—C. B. Backer Co. Ltd. has been incorporated with $50,000 capital and 10,000 no par shares by Christian B. Backer and Sigurd R. Lockeberg, to engage in the business of electrical manufacturer and machinist.

PORT STANTON, ONT.—F. Stanton is reported to be inquiring for equipment for a complete boat repair shop.

TORONTO, ONT.—Household Electric Service Ltd. has been incorporated with $40,000 capital by Benjamin Luxenberg, 102 Adelaide street west, as a manufacturer and dealer.

TORONTO, ONT.—Taco Heaters of Canada Ltd. has been incorporated with 40,000 no par shares by Roy Weldon, Kent building, to manufacture and deal in oil burners, furnaces, stoves and appliances.

MONTREAL, QUE.—Montreal Neon Signs Ltd. has been incorporated with $150,000 and 20,000 no par shares by James J. Rosevear, 461 St. Francis street, to manufacture and deal in neon signs, and electrical products.

MONTREAL, QUE.—Jenkins Bros. Ltd., 617 St. Remi street, manufacturer of valves, advises through A. G. Stewart, secretary, that a tract has been secured between Rockfield and Dominion stations, to which the plant will be moved. An iron foundry is to be the first unit erected. Ross & McDonald, 601 Belmont street, are architects. (Noted Oct. 23.)

New Trade Publications

MOTOR CONTROL STARTERS—As various motor control applications require different starters Allen-Bradley Co., Milwaukee, reviews in a current bulletin its devices for this purpose and suggests some factors entering into choice of the best suited.

PORTABLE ELECTRIC PLANTS—Advantages of electric light on the job, however, remote from usual current supply are pointed out by Sullivan Machinery Co., Chicago, in a current bulletin. Illustrations show its portable lighting sets with detail data.

ROLLER BEARINGS—Shafer Bearing Corp., Chicago, in a current catalog lists a wide range of stock mountings of its roller bearings adaptable to machine and industrial applications. It includes the recently increased range of types and sizes. The self-aligning principle is explained.

INDUCTION MOTORS — Reliance Electric & Engineering Co., Cleveland, in a current bulletin covers one type of its induction motors with ball bearings for two and three-phase alternating current. Illustrations cover all details of construction and data on ratings and dimensions are given.

PIPELINE PAINTER—A compressed air pipeline painter for applying coatings to oil and gas lines is described in a current bulletin of the Sullivan Machinery Co., Chicago. The device is pictured, its operation described and cost suggestions are made.

INDUSTRIAL RAILWAYS — Track and equipment for industrial railways are discussed and illustrated in a bulletin by the American Car & Foundry Co., New York. Various types of trucks and cars are illustrated, with track specialties and various items of equipment.

BELTING—Belting, hose, matting, packing and miscellaneous items for similar industrial use are covered in a bulletin by the Diamond Rubber Co., Akron, O. The cover of the bulletin was printed from rubber engravings, hand-cut from sheet rubber.

TRAMRAIL — Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O., calls attention in a current bulletin to differences developed in its hand-operated tramrail carriers which adapt them to various uses in industry. Illustrations present some of the uses.

PLATING MACHINES — A booklet has been prepared by the Meaker Co., Chicago, on its full automatic machinery for plating, galvanizing, pickling, cleaning and finishing. A chapter is devoted to chromium plating by automatic machinery. Development of this means of applying chromium automatically has overcome many difficulties.

DIAMOND DRILLS—Three bulletins on diamond drill equipment and service have been issued by the Sullivan Machinery Co., Chicago. Two are devoted to two sizes of core drills, one being portable, and the third to core drilling by contract. In the latter the subject of cores as indicators of underlying strata is discussed at length.

TEMPERATURE CUTOUT — Automatic control of furnace temperature without personal attendance is discussed in a bulletin by the Hevi Duty Electric Co., Milwaukee, which suggests its cutout as a solution of the problem. Other bulletins cover its pot-type electric furnaces and its vertical pressure carburizer.

INGOT IRON—Savings possible in the coal industry by use of its ingot iron form the subject of a booklet by the American Rolling Mill Co., Middletown, O. Less liability to rust deterioration is the basis of claims for economy in use of this material. Illustrations show installations of ingot iron and data as to savings are given.

NEW YORK TRADE DIRECTORY —Merchants Association of New York has published its 1930 yearbook containing the names of more than 7000 names, including firms, corporations and individuals in every line of industry in the city. The various branches of business are classified into many divisions and subdivisions.

THREADING AND CUTTING MACHINES—Descriptions and data covering its six and eight-inch pipe threading and cutting machines are included in an illustrated bulletin by the Landis Machine Co. Inc., Waynesboro, Pa. Detailed drawings call attention to construction and special features of the machines.

CHAIN—A processed malleable iron chain developed by the Link-Belt Co., Chicago, under the name Promal, giving high tensile strength and wear resistance, is the subject of a recent book issued by that company. It contains full data on this chain, its links, attachments and various uses. Dimensions, strength, list prices and weights are included.

WROUGHT IRON PIPE — Puddled wrought iron pipe as manufactured by the Reading Iron Co., Reading, Pa., is treated in a booklet recently issued, which contains much of interest. The history and development of the company are sketched and the history of wrought iron is told. Methods of manufacture of the company's products are described and illustrated and installations are pictured.